

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

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

March 2020 (completion of Part II of 2020 Addendum)

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 2020 Addendum to the 2014 Columbia River Basin 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 all recommendations in the draft and then final program amendments. This document also provides a response to comments the Council received on the recommendations, to the extent the comments included substance additional to the recommendations, and also a response to the comments received on the draft program amendments. Finally, this document includes the Council’s statement regarding the adoption of program measures to protect, mitigate and enhance fish and wildlife affected by the development and operation of the Columbia hydroelectric facilities “while assuring the Pacific Northwest an adequate, efficient, economical and reliable power supply,” otherwise known as the AEERPS statement.

The Council finalized Part II of the 2020 Addendum on Program Implementation in January 2020. The Council extended until later in 2020 the time for completion of Part I on Program Performance. Thus the “findings” document as of March 2020 includes the findings on program amendment recommendations and responses to comments for topics relevant to Part II and also the recommendations and comments on matters not reflected in either Part I or Part II. The only recommendations and comments not yet addressed in the findings document as of March 2020 are those relevant to the Program Performance topics addressed in Part I. Thus with regard to Part I, the document still contains the draft findings from July 2019, to be revised and finalized later in 2020.

Contents

Introduction and Program Amendment Process	(3)
Part I: Program Performance	(6)
Program Goals and Objectives/Adaptive Management	(6)
Part II: Program Implementation	(14)
Program Overview and Introduction, including Program Framework	(14)
Program Vision and Scientific Foundation	(19)
Program Strategies	(21)
Ecosystem Function	(21)
Habitat Protection and Improvement	(21)
Strongholds	(24)
Non-Native and Invasive Species	(25)
Predator Management	(25)
Protected Areas and Future Hydroelectric Development	(36)
Water Quality	(37)
Climate Change	(39)
Mainstem Hydrosystem Flow, Water Management and Passage	(46)
Estuary	(56)
Plume and Nearshore Ocean	(58)
Wildlife Mitigation	(62)
Fish Propagation including Hatchery Programs	(65)
Wild Fish	(74)
Anadromous Fish Mitigation in Blocked Areas	(77)
Resident Fish Mitigation	(91)
Sturgeon	(96)
Lamprey	(99)
Eulachon	(102)
Subbasin Plans	(105)
How the Program is Implemented	(107)
Program Measures	(107)
Investment Strategy	(109)
Program Priorities	(110)
Budget Allocation among Anadromous Fish, Resident Fish and Wildlife	(118)
Budget Management and Implementation Efficiencies	(120)
Cost Savings	(122)
Implementation Procedures	(124)
Program Coordination	(124)
Project Review	(125)
Independent Scientific and Economic Review	(125)
General Comments on the Draft of Part II	(130)
AEERPS Statement	(139)

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 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 sets of 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 released a draft 2020 Addendum to the 2014 Program for public review and comment in July 2019. The Council developed and approved the draft after consideration of program amendment 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 Council took formal public comment on the draft 2020 Program Addendum through October 18, 2019. The Council received 114 written comments, including comments from seven state fish and wildlife agencies and other state and state-supported agencies; 13 Columbia Basin Tribes and tribal organizations; four federal fish and wildlife and other federal agencies; four Bonneville customers, other utilities and utility organizations, other river users and user groups; nine environmental and fishing groups and similar non-governmental organizations; and hundreds of individuals. During this comment period, the Council also held eight public hearings, one large-group technical consultation relating to the topics in Part I of the draft Addendum, and engaged in a number of consultations with especially fish and wildlife agencies and tribes, individually and in groups.

One set of comments asked the Council not to adopt Part I of the Addendum on the Council's expected schedule, that is, by January 2020, and instead engage in further collaborative efforts on the topics covered in that part. The Council made a formal decision at its regular monthly meeting in December 2019 to extend the time for acting on the recommendations relevant to Program Performance and finalizing Part I of the

2020 Addendum. As of February 2020, the Council is continuing its discussions on Part I.

The Council proceeded on schedule to finalize Part II of the 2020 Addendum on Program Implementation at its regular January 2020 Council meeting. The Council decided on the final program amendments in Part II of the 2020 Addendum after consideration of program amendment recommendations, the supporting documents that came with the recommendations, the comments offered on the recommendations, the comments provided on Part II in the draft 2020 Addendum, 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 Council is completing the program amendment process relevant to Part II of the 2020 Program Addendum by adopting in March 2020 this findings and responses document as a part of the Fish and Wildlife Program.

The Council's decision to proceed by program "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 comments the Council received on the draft

Addendum raised issues with the contents of both Parts I and II of the Addendum. But the comments did not raise significant issues with the concept of proceeding by Program Addendum in this program amendment process. The Council decided, in the decision on the final program amendments in Part II of the 2020 Addendum, to continue on this course.

The Council considers the 2020 Addendum to be part of the 2014 Fish and Wildlife Program. 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. The findings on recommendations and responses to comments should also be considered part of the 2020 Program Addendum and thus also part of 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 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.

This document is organized at the broadest level to reflect the organization of the 2020 Program Addendum. Again, as of March 2020, the findings that relate to the recommendations and topics relevant to Part I of the Addendum are merely a Council staff draft reflecting the text of the draft Part I contained in the July 2019 draft Program Addendum. This portion of the document will be revised and finalized later in 2020 to reflect the Council's final decision on the provisions of Part I.

With regard to Part II of the 2020 Addendum, the discussion and final findings and responses to comments are further organized to reflect the organization of the 2014 Program. In the discussion, 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 on the Council's website at [Columbia River Basin Fish and Wildlife Program 2018-2020 Amendment Process](#). The Council's responses are in italics.

[¹Part I: Program Performance

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 the 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

¹ As of March 2020, the Council has not yet finalized Part I of the 2020 Program Addendum. Thus this part of the "findings" document remains a Council staff draft as of March 2020, relating only to the provisions of the draft Part I in the 2019 draft Program Addendum. Nothing in this part has been approved or adopted by the Council.

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 toward 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 needs a robust, well-funded monitoring and evaluation program to ensure that long-term anadromous, resident fish and wildlife projects achieve 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 are 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 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.]

Part II: Program Implementation

In Part II of the 2020 Program Addendum, the Council identified a set of near-term priorities for implementation and funding. The discussion, findings, explanations and responses in the rest of this document are approved by the Council as part of the Fish and Wildlife Program in March 2020, supporting and explaining the Council's decision in January 2020 to approve the text of Part II of the 2020 Addendum. In this part, the Council addresses the recommendations and comments used to develop Part II of the 2020 Addendum *and* all other recommendations and comments received by the Council in this amendment process other than those relevant to the Program Performance topics covered in Part I of the Program Addendum, that is, other than those relevant to the Program's goals and objectives, the development of performance indicators, and the Program's provisions relating to research, monitoring, evaluation, reporting and adaptive management.

This part of the document is organized to mirror the substantive organization of the 2014 Program. At the end are also (1) responses to general summary comments on the draft of Part II that needed to be acknowledged but did not fit well into the discussions of specific program provisions and (2) the Council's statement regarding the adoption of program measures to protect, mitigate and enhance fish and wildlife affected by the development and operation of the Columbia hydroelectric facilities "while assuring the Pacific Northwest an adequate, efficient, economical and reliable power supply," otherwise known as the AEERPS statement.

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 the 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 and 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 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 subbasin (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".

The Council did not include provisions in the draft or final versions of Part II related to the Program Overview and Introduction, with one exception. The one exception is that the Council included, in the draft Addendum Introduction, a list of

“accomplishments” from implementation of the 2014 Program that supplement the list of the program’s “successes” and “challenges” in the Introduction to the 2014 Fish and Wildlife Program, at 20-24. The Council received substantial comment on the draft’s statement of accomplishments. Those comments will be detailed and addressed at the time the Council completes Part I of the 2020 Addendum.

The only other comments on the draft Part II relevant to a section in the 2014 Program Introduction (the section on “ratepayer responsibilities,” *2014 Fish and Wildlife Program, at 14*) were general concerns expressed by Bonneville, the Public Power Council, Snohomish PUD, and Western Montana Electric G&T Cooperative about the relationship of certain activities and issues addressed in Part II to the impacts of the federal hydropower system on fish and wildlife. The comments included that the Council is losing sight of the statutory requirement that program measures must have a clear connection or nexus to mitigation of specific impacts from the federal hydrosystem.

Nothing in the recommendations or comments 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, the program’s general approach to protection and mitigation, and the specific implementation provisions in Part II 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. The Council clearly recognizes in the discussion of “ratepayer responsibilities” that consumers of hydroelectric power are obligated under the Act to bear the cost of measures designed only to deal with the adverse impacts of the Columbia hydroelectric facilities on fish and wildlife; that under the Act this includes measures that directly address hydrosystem impacts and also in appropriate circumstances offsite mitigation and protection measures; and that the required “nexus to the hydrosystem that allows a measure to be an appropriate part of the program is whether the measure will provide protection or mitigation benefits for fish or wildlife adversely affected by the hydrosystem or to compensate for effects not already mitigated.” *2014 Fish and Wildlife Program, at 14. Specific issues will be addressed later in this document.**

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. Many of the recommendations regarding the program's priorities and emphasis are discussed below, in the section of program implementation and priorities or in the section toward the end addressing general comments on the draft Part II.

In the Addendum (when complete with the finalization of Part I), the Council will be supplementing the 2014 Program Introduction's list of program accomplishments, while continuing to recognize the challenges in achieving success in program implementation. See 2020 Addendum, Part II, at 3. Findings and responses related to that section will be developed at that time.

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.

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 to 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 Addendum's implementation and performance provisions. See also the discussions of hydrosystem responsibility in the previous section and at specific points later in the document.*

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, at 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 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 a 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. No entity commented on the draft Addendum to object to this approach. 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 track measurable ecological outcomes (e.g., species viability, threats status/trends, management action effectiveness) and strategically guide future ecosystem protection and restoration actions.

Note that one central purpose of the draft Part I of the 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 identifying 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 (to be finalized later in 2020).

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 channel 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 Survey 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; how those interactions (geomorphic processes) may or may not sustain the success of aquatic and floodplain restoration projects; increasing research on mainstem habitats that support salmonids, lamprey, and resident fishes; and developing 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 toward "preventative actions"; and related measures.

Again, the Council does not disagree 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 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 Fish and Wildlife 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. No entity commented on the draft Addendum to object to this approach to the Habitat sub-strategy.

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 track 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 Montana Natural Resource Damage Program commented on the draft to the same effect, including the ability to partner on flow projects in the upper Columbia. 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 general measures in the Ecosystem Function strategy and Habitat sub-strategy support the water transaction program. 2014 Fish and Wildlife Program, at 42. No program changes are needed to continue that support. 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.

In comments on the draft Addendum, the Oregon Watershed Enhancement Board commented to note that Bonneville has recently taken a more active role in various aspects of the planning and permitting of watershed restoration projects. Bonneville involvement in projects can provide benefits such as proactive communication and collaborative problem solving; but it also has the potential to greatly increase the time needed for coordination on planning, survey, and reviews. OWEB encouraged Bonneville to work closely with the local implementation partners on watershed restoration projects with the intent of maximizing the effectiveness and efficiency of Bonneville's project planning and implementation. *The Council appreciated the comment and commends it to Bonneville's attention as well. The Council did not identify a need to make a change in Part II in response.*

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 Fish and Wildlife Program, at 44.*

In this amendment process the Council received recommendations relating to the Strongholds strategy from Montana Fish, Wildlife and 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 need to revise the Strongholds sub-strategy in the program, nor a specific implementation need regarding strongholds to include in the implementation provisions in the draft Addendum. No entity commented on the draft Addendum to object to this approach. 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 (to be finalized later in 2020).

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 Fish and Wildlife 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.

A number of the recommendations sought edits to or additional provisions in the Non-Native and Predator Management strategies in the 2014 Program 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-shares; 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 systemwide 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.

Comments on the draft of Part II echoed the recommendations, including general support for the program's emphasis and approach on predator management, including comments from (among others) the Washington Department of Fish and Wildlife, Confederated Tribes of the Colville Reservation, Upper Snake River Tribes Foundation, Upper Columbia Salmon Recovery Board, Public Power Council, Chinook Indian Nation, and the consulting firm Cardno. The Upper Snake River Tribes Foundation commented on the need for a comprehensive strategy to prevent the introduction of non-native and invasive species in the Columbia River Basin and to suppress and/or eradicate non-native and invasive species where they negatively impact salmon, steelhead, and native resident fish. Much of the focus of these comments was on non-native mussels, but also addressed non-native predators including especially Northern

Pike. The Public Power Council commented that the program should build on the success of past accomplishments and support more aggressive control measures for marine mammals, birds and fish populations that feed on significant numbers of salmon and steelhead. Comments from Cardno agreed on the need for an ecosystemwide, multi-predator, multi-prey and multivariate approach in evaluating the potential impacts of predation on Columbia Basin threatened and endangered salmonids, and recommend the development of an integrated modeling framework and a number of analytical tools and methods. The Chinook Indian Nation commented to support maintaining funding for this growing area of need, seeking to work alongside the Council's scientific partners in identifying predator species/problems and consulting on mitigation strategies.

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 in the 2014 Program 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 equally 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 predator species to protect, mitigate, and enhance fish and wildlife affected by the hydropower projects. For these reasons, and similar to other sections, the Council did not identify a need to amend the sub-strategies in the 2014 Program. No entity commented on the draft Addendum to object to this approach.

Consistent with the recommendations and comments, the Council did emphasize in Part II of the Addendum the need for the federal agencies and states and tribes to sustain and support implementation of ongoing predator management activities, and in some specific cases increase or revise those efforts. 2020 Addendum, Part II, at 8. The Council then added provisions that address recommendations and comments concerned about the implementation of actions aimed at Northern Pike, pinnipeds and avian predators. Id. (discussed more below). Part II also identified, 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 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. Id.

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. Draft 2020 Addendum, at 22, 23 (to be finalized later in 2020).

Turning to 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. In comments on the draft, the Upper Snake River Tribes Foundation called for a comprehensive strategy to prevent the introduction of non-native and invasive species in the Columbia River Basin and

suppress and/or eradicate non-native and invasive species where they negatively impact salmon, steelhead, and native resident fish, with much of the focus on non-native mussels. Also in comments on the draft, the Public Power Council called on the Council to support a regionwide effort to control invasive mussels that will significantly harm important investments the region has made on fish passage systems; support a continued regional approach to establish a defensive perimeter to keep invasive mussels out of the Columbia River Basin; and work to ensure that funding for programmatic efforts to control invasive mussel species be at a regional level and not by Bonneville ratepayers as it is a regional issue with potential impacts to multi-purpose federal assets in the Columbia River system.

The 2014 Program supports 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 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. As evidenced in the program language, the Council agrees with the Public Power Council that this is a regional issue with many dimensions, and not simply an effort to be borne by the Bonneville ratepayers. Part I of 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 (to be finalized later in 2020). 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. No particular implementation need is called out in the recommendations beyond the efforts already in motion. The Council did not identify a particular near-term implementation issue to include in Part II.

Next, the recommendations addressing these two strategies overlapped regarding the subject of most interest – the recent proliferation of non-native 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.

Note that while the 2014 Program does not specifically mention Northern Pike in either the Non-Native or the Predator Management strategy, these strategies are directly aimed at suppressing and eradicating non-native aquatic predators that threaten the program's focal species. The 2014 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.

Thus based on the recommendations in this amendment process, the Council included a provision in Part II of the draft Addendum calling for Bonneville and others to support the ongoing efforts to assess and remove Northern Pike from the Lake Roosevelt area and other parts of the basin. The draft provision also specifically called on Bonneville to fund and implement the already approved Northern Pike project, but also noted that the Northern Pike problem is an issue broader than the federal

hydropower system responsibility and so called 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.

Comments on the draft supported the Council's provision on suppression of Northern Pike predation. This includes comments from, among others, the Spokane Tribe of Indians, Confederated Tribes of the Colville Reservation, Washington Department of Fish and Wildlife, NOAA Fisheries, the Upper Columbia Salmon Recovery Board, Spokane Riverkeeper, and Cardno. The Spokane Tribe of Indians did express concern about what they perceived as an attempt to deflect responsibility for the Northern Pike problem away from the federal hydrosystem, and requested the Council change the language in the Part II Addendum to say Bonneville "shall fully" fund the Northern Pike removal project (rather than just Bonneville "should" fund the project) and remove the clause at end that notes "as this is an issue broader than a federal hydrosystem responsibility." Western Montana G&T Cooperative commented with concern about the call for Bonneville funding for Northern Pike removal programs, but were still encouraged that the Addendum recognized this effort should be coordinated with state agencies and tribes to solicit and obtain contributions from other affected entities, as an issue broader than a federal hydrosystem responsibility and so funding should not fall only on Bonneville customers. The Kalispel Tribe commented that the provision in the draft ought to include explicit mention of the need for suppression of Northern Pike in the Pend Oreille River. And Cardno commented that suppression efforts are not sufficiently collective or integrated at an ecosystem level and supported the development of a species distribution model and other analytical techniques to guide the allocation of resources for the greatest likely reductions in Northern Pike populations.

In response to the recommendations and comments, Part II of the 2020 Addendum calls for Bonneville and others to support the ongoing efforts 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. Part II of the 2020 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. 2020 Addendum, Part II, at 8. The Council does believe the federal hydrosystem has a responsibility and role in Northern Pike suppression, and that the language used appropriately expresses an expectation that Bonneville will fund the identified suppression project – the revised language suggested

by the Spokane Tribe of Indians would not alter or improve that meaning. And the Council, based on the recommendations and comments and other information, also concludes that it is appropriate to recognize the Northern Pike problem has many sources and characteristics beyond the hydrosystem, and success will require the combined participation and resources of various entities in the region.

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 any expansion of the Northern Pikeminnow removal effort occur only 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. Part I of the draft Addendum did include predator management strategy performance indicators to track progress on implementation, including an indicator to compare the exploitation rate on Northern Pikeminnow to the 10-20 percent annual target. Draft 2020 Addendum, at 23 (to be finalized later in 2020).

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.*

Turning to avian predation, 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.

Comments on the draft of Part II expressed similar support for continuing aggressive implementation efforts to reduce avian predation, including comments from the Washington Department of Fish and Wildlife, U.S. Fish and Wildlife Service, NOAA Fisheries, Confederated Tribes of the Colville Reservation, and Upper Columbia Salmon Recovery Board. The Oregon Department of Fish and Wildlife commented that the agency remains concerned regarding what it perceives as a disconnect between the actions, measures, and goals implemented under action agencies' avian predation plans and actual effective avian predation reduction in the basin. Cardno commented on the need to design and implement quantitatively rigorous monitoring programs that describe the spatial-temporal dynamics of the metapopulations of avian predators in the Basin and the effectiveness of management actions to reduce impacts.

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. The Council reinforced this priority in Part II of the 2020 Addendum by noting concerns about recent trends of reduced support for actions attempting to reduce avian predation, calling instead on the federal agencies, working with the states and tribes, to continue to provide adequate funding to implement activities to reduce avian predation impacts to salmon and steelhead to the extent possible. 2020 Addendum, Part II, at 8. The Council also agreed that measures to address avian predation must ultimately be evaluated along with other predation measures in an ecosystem-based approach not just to determine the effects on the predators but also to demonstrate effectiveness in increasing fish survival. Id. The Council also 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, and the linkage of one indicator (sea lions) to fish survival, id., at 23 (to be finalized later in 2020), as well as 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. 2020 Addendum, Part II, at 8.

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 recommended 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.

Based on the recommendations, the Council included a provision in Part II of the draft Addendum noting that federal legislation provides the opportunity for state and tribal managers to more effectively reduce predation by lethally removing sea lions in the Columbia River and tributaries that have returning adult ESA-listed salmon and steelhead and calling on the federal agencies to reinforce and strengthen their cooperative partnerships with the states and tribes in support of this effort. Comments in support of this provision came from the Washington Department of Fish and Wildlife, Oregon Department of Fish and Wildlife, Idaho Department of Fish and Game/Idaho Office of Species Conservation, NOAA Fisheries, Confederated Tribes of the Colville Reservation, and Upper Columbia Salmon Recovery Board. Oregon Department of Fish and Wildlife and Idaho Department of Fish and Game/Idaho Office of Species Conservation commented that the language needed to be stronger to clearly reinforce the need for additional funding for this effort. Cardno called for a comprehensive pinniped management model and other analytical techniques to help understand the implications of individual species removal programs on overall pinniped predation on adult salmonids.

The provisions in the 2014 Program already support an aggressive effort to manage pinniped predation, and significant implementation efforts are underway, and so the Council concluded it did not need to revise the 2104 Program language. But out of the recommendations and comments and recent developments the Council did identify, in Part II of the Addendum, both the opportunity and need presented by new legislation for the federal agencies to reinforce and strengthen the cooperative partnerships with the states and tribes in this effort and provide the support needed to the tribes and states for more effective management of pinniped predators. The actions in support of this effort can include providing additional resources as needed to support the effort consistent with the legislation. 2020 Addendum, Part II, at 8.

In Part I of the draft Addendum, the Council included performance indicators to track the effectiveness of pinniped control measures and their relationship to improving salmon and steelhead survival. Draft 2020 Addendum, at 23 (to be finalized later in 2020). And as noted above, Part II also identified 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. 2020 Addendum, Part II, at 8. 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 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; 2020 Addendum, Part II, at 8 (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 or comments addressing the Council's Protected Areas strategy. The Council did not include in Part II any substantive provisions relevant to the Protected Areas.

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 and comments 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 the 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. EPA similarly commented on the draft Addendum to commend the Council for continued recognition and increased attention of the importance of water quality to promote ecosystem restoration, and fish and wildlife recovery in the Columbia River Basin and to recommend continued attention to toxics contaminants. 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 incorporate pollution reduction and mitigation techniques into restoration projects when toxic contamination is a concern. Thus, 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 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 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 a need to amend the provisions of the 2014 Program at this time. Nor did the Council 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 2020 Addendum. No entity commented on the draft Addendum to object to this approach.

Part I of the draft Addendum did identify that 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, quantity, 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 (to be finalized later in 2020). 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 percent dissolved gas standard for Albeni Falls Dam set by the State of Idaho. *The Council did so in Part I of the Draft 2020 Addendum, at 23-24 (to be finalized later in 2020).*

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 leading into 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 recommended 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 monitoring changes in the hydrograph and water temperature regimes and identifying 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 decisionmaking; 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 adaptation 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 basinwide 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 Tribes and Upper Snake River Tribes recommended a basinwide 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 and 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 Foundation, 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. 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 appropriate, and none is rejected as inconsistent with the program or with the substantive provisions of the Act, but at the same time as explained in more detail below, 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 Addendum.

Climate change considerations are embedded and addressed not just within the program’s Climate Change sub-strategy but also within the broader, programwide 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 circumstances 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 2014 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 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 Addendum, Part II, at 3, 4 (see also Draft 2020 Addendum, Part I, at 6 - to be finalized later in 2020). Consistent with the recommendations, the Council included indicators in the draft of 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. Draft 2020 Addendum, Part I, at 22-24, 26 (to be finalized later in 2020). 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. 2020 Addendum, Part II, at 4.

Comments on the draft supported the Council’s general approach on climate change in this amendment cycle, including the establishment of a science-policy forum. See comments from Washington Department of Fish and Wildlife, Oregon Department of Fish and Wildlife, Upper Columbia Salmon Recovery Board, NOAA Fisheries, and U.S. EPA. The Columbia Inter-Tribal Fish Commission commented that it was encouraged

the Council identified addressing climate change on the list of near-term priorities for the program. The Nez Perce Tribe commented that the Council should provide a description of the Climate Change science-policy forum membership ensuring Nez Perce Tribe inclusion. *The Council did so, making explicit that the Council will consult with the Columbia Basin Tribes as well as others about how best to establish and operate the standing science-policy forum. Id.*

Western Montana G&T Cooperative commented on the draft that rather than just considering the implications of climate change through a policy forum, the Council in the program should consider the benefits that the Federal hydrosystem provides to keep carbon emissions in the Pacific Northwest extremely low, and that in light of the climate change benefits and reliability role provided by the hydrosystem, the Council should carefully evaluate the implications of dam breaching and provide a technical analysis of the contributions of the hydrosystem toward maintaining power system reliability while contributing to reductions in greenhouse gas emissions rather than simply viewing fish and wildlife and power planning as separate issues. *As the Council has noted in past power plans and separate analyses, the Council agrees that the electrical power supply in the Pacific Northwest has a low carbon footprint largely because of the combination of a hydrosystem base and 40 years' worth of the addition of energy efficiency measures to that base. Nothing in the Addendum is intended to change or affect that perspective; the Council intends the science-policy forum precisely as a place to integrate the fish and wildlife and power planning implications of climate change. The Council will explore the matters raised by Western Montana G&T Cooperative further in the follow-on power planning effort. This comment is also noted and addressed below, in the section on the mainstem and recommendations and comments about dam breaching.*

In a comment on the draft, the Upper Snake River Tribes Foundation reiterated their recommendations that the Council should update the Climate Change sub-strategy in the 2014 Fish and Wildlife Program to note that Columbia Basin Tribes have continued to work on climate vulnerability assessments; have completed, or are nearing completion of, tribal resiliency plans; and will soon be implementing projects and programs to help tribal communities across the Columbia Basin begin to address the severe impacts of climate change on their air, water, and natural and cultural resources now and into the future. The Upper Snake River Tribes Foundation then called for the development across the program of climate change vulnerability assessments followed by linked adaptation/protection plans, with detailed steps and criteria.

The Council appreciates the great deal of thought and considerations that went into the recommendations and comments from the Upper Snake River Tribes Foundation.

For the reasons noted above, the Council did not see a need at this time to revise the Climate Change provisions in the 2014 Program; these recommendations will be useful when the time is ripe to revisit the program text itself. The issue at this point for the Council was whether to add to Part II of the Addendum a call for a new and distinct Fish and Wildlife Program-focused vulnerability assessment planning process across the basin, akin to another mainstem and subbasin plan planning process. The Council concluded that a distinct program planning process for this purpose was not an effective use of resources at this time. Instead the Council reiterated the need to integrate considerations of climate change into all aspects of on-going program planning and implementation. 2020 Addendum, Part II, at 4. That is, wherever and whenever planning processes do occur, climate change assessments such as called for the by these tribes should occur. The Council also notes here that one topic that could be considered by the climate change science-policy forum called for in Part II of the 2020 Addendum is whether additional assessments and planning are needed for this purpose.

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.

In related comments on the draft Addendum, the EPA commented to commend the Council for continued recognition and increased attention of the importance of water quality to promote ecosystem restoration, and fish and wildlife recovery in the Columbia River Basin; recommended continued attention to water temperatures; and encouraged the Council to continue to emphasize the importance of restoration and protection of cold water refuges in the Columbia River due to climate change and increased water temperatures. And Bill Bakke commented that the program should establish a 68 degree F temperature trigger on the Columbia; designate thermal refuges where heat stressed salmon and steelhead seek relief; and close fisheries in thermal refuges until the Columbia River temperature is less than 68 degrees F. Ed Averill commented that the Council should oppose fossil fuel export terminals as another addition to climate change and rising temperature effects that destroy fisheries.

The Council agrees on the need to emphasize the importance of cold water refuges; as noted above, the 2014 Program already has provisions to this effect. The Council does not need to identify or designate such refuges, or set specific water temperature standards; that work has been undertaken by EPA and its partners, and so the Council did not see a specific near-term implementation issue to include in Part II. The Council did see a need, based on the recommendations and comments and implementation information, to more closely track temperature conditions and impacts. So, beyond the 2014 Program measures, the draft 2020 Addendum addressed 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 (to be finalized later in 2020).

Mainstem Hydrosystem Flow, Water Management and Passage

In the 2014 Program, Mainstem Hydrosystem Flow and Passage Operations are a sub-strategy of the broader programwide 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. One set of 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 large 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 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. No entity commented on the draft Addendum to object to this approach.

In developing the draft of Part II, the Council also concluded that the text of the 2014 Program, in combination with the findings, would be sufficient to recognize the hydrosystem operations and standards in the 2019 Columbia River System Biological Opinion and the 2018 Accord Extensions as a continuing part of the program’s mainstem measures and objectives. And so the Council did not include in the draft Part II any specific mention of these developments. 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 (to be finalized later in 2020).

A number of comments on the draft objected to the Council’s approach to these matters in Part II, pressing the Council to revise Part II to explicitly recognize, incorporate and support the relevant developments post-2014, including the 2019 Columbia River System Biological Opinion, the 2018 Accord Extensions, and related developments. Doing so, as commented by NOAA Fisheries, would ensure that the program would include the most up-to-date flow, passage, and reservoir operations with implementation commitments. Similar or related comments came from the Columbia River Inter-Tribal Fish Commission, Nez Perce Tribe, Yakama Nation, Confederated Tribes of the Umatilla Indian Reservation, Confederated Tribes of the Warm Springs Reservation of Oregon, Yakama Nation, and Public Power Council.

Based on these comments, the Council added a section to Part II, entitled “Program Measures – Implementation Commitments,” to recognize explicitly as part of the program relevant implementation commitments post-2014. This includes the 2018 Columbia Basin Fish Accord Extensions and the 2019 Columbia River System Biological Opinion, including the 2019-2021 Spill Operation Agreement. 2020 Addendum, Part II, at 9.

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 percent 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 Commission, 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 systemwide 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 percent 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 percent 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 percent 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.

As noted above, the Council explicitly recognized and incorporated into the final version of Part II the 2019 Columbia River System Operations Biological Opinion, including the 2019-2021 Spill Operation Agreement. The Council supports the collaborative federal, state, and tribal agreement on the flexible spill operation that is part of this agreement, 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.

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 and 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 20th-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 the same refinements to the Libby Dam operations, and 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 Part II, calling on the Corps of Engineers and Bureau of Reclamation to implement these refinements as recommended by Montana Fish, Wildlife and Parks and the Kootenai Tribe of Idaho, working with those two entities and the Confederated Salish & Kootenai 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. 2020 Addendum, Part II, at 7. Comments on the draft

from Montana Fish, Wildlife and Parks and the Kootenai Tribe of Idaho supported the inclusion of these operational refinements; the Kootenai Tribe commented to remind the Council that it, too, recommended these refinements at Libby. *The Council revised the provision in the final to be inclusive of the equal role of the Kootenai Tribe of Idaho.* The Idaho Department of Fish and Game/Idaho Office of Species Conservation, NOAA Fisheries, and U.S. Fish and Wildlife Service all commented in general support of the operational refinements at Libby and Hungry Horse, but asked to be involved in the implementation efforts as they also have interests that could be affected. *The Council revised the language in the final accordingly. Id. The Council does not intend the inclusion of a wider group of entities to be consulted to impede the timely consideration and implementation of these refinements at Hungry Horse and Libby. The Chinook Indian Nation also commented on the draft in support of the continued working partnership between Montana Fish Wildlife and Parks and the Confederated & Salish and Kootenai Tribes and the Kootenai Tribe of Idaho.*

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 Lake Roosevelt to a minimum elevation of 1,283 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 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 Kalispel Tribe recommended – and then commented on the draft – seeking recognition in the program of developments with regard to the implementation of the Kalispel Accord, including operations and passage at Albeni Falls Dam. *See the discussion below, in the section on Program Measures.*

Chelan PUD recommended – and commented on the draft – seeking to have the Council again recognize the Mid-Columbia Habitat Conservation Plans and their role in protection and recovery of listed and unlisted salmon and steelhead, including recognition of the no-net impact achievements that have been accomplished. NOAA Fisheries recommended general support for implementation of settlement agreements and biological opinions for FERC licensed projects within the Columbia River Basin. *The 2014 Program continued 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 is sufficient for the mainstem section. For more, see the discussion below, in the section on Program Measures.

The 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, the 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. No entity commented on the draft Part II to object to this approach.

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.

And in comments on the draft Addendum, the Sierra Club, the Orca Network, Whale and Dolphin Conservation, and many other organizations, associations, and individuals called on the Council to add a provision calling for breaching of the lower Snake River dams to boost in-river salmon and steelhead migration survival and reduce water temperatures. This action is necessary, in their view, to prevent salmon, steelhead, and orca populations from extinction and begin to rebuild their numbers to achieve the abundance and SAR objectives in the Council's program. The comments also asked the Council to plan for clean energy replacement for the output of these dams, and also to support discussions on this topic underway in Idaho and under the auspices of the Columbia River System Operations EIS. The Nez Perce Tribe commented that the current status and trends for salmon and steelhead signal the need for more dramatic actions such as breaching the four lower Snake River dams, which in turn may reveal opportunities to modernize the Northwest Power Act. Finally, as noted above in the climate change section, Western Montana G&T Cooperative commented that the Council should consider the benefits that the federal hydrosystem provides to keep carbon emissions in the Pacific Northwest extremely low, and in light of the climate change benefits and reliability role provided by the hydrosystem, the Council should carefully evaluate the implications of dam breaching and provide a technical analysis of the contributions of the hydrosystem toward maintaining power system reliability while contributing to reductions in greenhouse gas emissions.

Alternatives including the possible removal of dams on the lower Snake River are under study in the Columbia River System Operations EIS. 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. Instead, the Council and its analytical capabilities are available to help the relevant entities involved in this planning effort review issues and outcomes in whatever way they deem would be useful, including assisting in review of power system implications or biological benefits. At the same time, the Council's obligation under the Northwest

Power Act is to develop the best program to protect, mitigate and enhance fish and wildlife affected by the existing system, not to plan and call for the removal of existing system resources. If decisions or commitments are made by others to remove – or seriously plan for the removal – of existing system resources, including the dams on the lower Snake River, the Council would of course use its power planning efforts and power plan to assess the impacts and recommend a plan for adapting the system and adding resources to ensure the system remains adequate, reliable, affordable, and as environmentally benign as possible, and meets the clear energy goals of the Northwest states, including goals for greenhouse gas reduction and elimination.

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 percent SAR target. A number of comments on the recommendations cautioned that it 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 percent 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 (to be finalized later in 2020). 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. At this point, the Council suggests the research and analysis behind this Kintama 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 to 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, the 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 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. No entity commented on the draft Part II to object to this approach. 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 to better understand the effectiveness of restoration actions.

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. 2020 Addendum, Part II, at 6. NOAA Fisheries and the Chinook Indian Nation commented on the draft in support of this provision. NOAA Fisheries further commented that Bonneville should have an ongoing role in monitoring action effectiveness at the site scale. The Council does not disagree, but did not identify out of the recommendations and comments a particular implementation issue to include in Part II.

And, NOAA Fisheries also commented that that the Council's program should incorporate the goals and priorities for landscape-level restoration planning developed by the Expert Regional Technical Group in 2019. The Council notes and supports the continued efforts, consistent with the recommendations and comments, 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 added a provision to that effect in Part II, in the section on Program Measures. 2020 Addendum, Part II, at 9.

Otherwise, the Council addressed relevant matters in Part I of the draft Addendum, on Program Performance and Adaptive Management. In that part, 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 (to be finalized later in 2020). This logically includes estuary habitat, how that habitat is used by juveniles, and the effectiveness of habitat improvements. 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. Id., 22, 24 (to be finalized later in 2020).

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. Recommended textual changes can be considered at the time the Council comprehensively revises the program. No entity commented on the draft Addendum to object to this approach.

In Part I of 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 (to be finalized later in 2020). 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 agreed 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, the Council included in Part II of the 2020 Addendum 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. 2020 Addendum, Part II, 5-6. 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 Bonneville has substantially reduced support for the ocean research work, to the point that critical elements and information are at risk. Thus in this Part II provision, 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.*

Comments on the draft Part II supported this provision, including from NOAA Fisheries, Washington Department of Fish and Wildlife, and the Chinook Indian Nation. The Columbia River Inter-Tribal Fish Commission commented that it was encouraged the Council identified addressing ocean conditions in this way on the list of near-term priorities for the program. The Public Power Council commented that the Council's program should continue to support ocean research that identifies the effects of ocean conditions on salmon and steelhead.

Bonneville and Western Montana G&T Cooperative both commented with concerns about the nexus between activities implemented to derive and consider information related to ocean conditions and the requirement in the Act that the program include measures and objectives to protect, mitigate and enhance fish and wildlife affected by the development and operation of the Columbia hydroelectric projects. *The Council agrees that all program measures and all activities implemented by Bonneville and other federal agencies under the program must be relevant to helping the Council and the federal agencies fulfill their responsibilities under the Northwest Power Act to protect, mitigate and enhance fish and wildlife affected by the Columbia hydrosystem.*

The Council has addressed the nexus question many times in the past, including as it relates to program measures and implementation actions regarding ocean conditions. E.g., 2014 Program, at 276. The Council remains comfortable that the program measures relating to ocean conditions adopted in the program are within the scope of that authority, as is the specific implementation provision the Council included in Part II. The Council avoids adopting measures that seek knowledge about the ocean for the sake of knowledge or to help agencies make decisions about fish management unrelated to improving the protection and mitigation of fish and wildlife affected by the Columbia River hydrosystem. The Council has been careful to focus on the need for information about the ocean in three ways clearly related to the needs of the hydrosystem protection and mitigation program: (a) How ocean conditions affect the survival of important Columbia River salmon and steelhead and other fish that have both a freshwater and saltwater component to their life cycle and for which the program invests hundreds of millions of dollars to improve that freshwater survival – without information on ocean conditions and related survival, how well can we understand the effectiveness of program efforts to improve freshwater survival? The project review provision that Congress added in 1996, calling for the Council to assess the impact of ocean conditions on fish and wildlife populations in making project review recommendations to Bonneville, is just an added if explicit expression of this principle. (b) The direct impact of hydrosystem development and operations on conditions in the estuary, plume, and near-shore ocean and thus directly affecting salmon and steelhead survival. (c) The effectiveness of mitigation actions intended to enhance conditions in the estuary and related environs and boost salmon and steelhead survival and productivity as compensation for losses stemming from hydrosystem effects. All of these are clearly within the scope of the authority for the Council to include as program measures, and for Bonneville and the other federal agencies to fund and implement under the Act as well.

Bonneville included in its comments a caution that justifications such as regional “interest and participation” are not a statutory basis for action and are insufficient to

support a Bonneville decision to fund a project. *The Council completely agrees – the Council did not intend the reference in the Part II provision to the work of the Council’s Ocean Forum to be a statement of statutory justification.*

Finally, the Council had a comment on the draft Addendum from Ed Averill about the need to learn how to intervene both in river fisheries and ocean ones, including learning how to restore kelp forests that supported fish populations with both food and oxygen. *The Council agrees on the importance of the food web considerations. Whether the program would or could ever extend to actions to restore near-shore habitat conditions is not an issue to address now given the recommendations in this amendment cycle.*

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 (to be finalized later in 2020). The tables were the subject of considerable comment on the draft, particularly from Bonneville, comments that will be addressed as the Council further considers and finalizes Part I later in 2020.

In the meantime, the Council continues to endorse the provision in the 2014 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 language at this time. The Council will consider revising or removing this provision when next comprehensively revising the program. With regard to Part II, the Council noted simply that 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. 2020 Addendum, Part II, at 4-5.

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 Council is retaining the 2014 Program provisions that include the 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 (to be finalized later in 2020).

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 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, Part I, at 29 (to be finalized later in 2020). 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 (to be finalized later in 2020). 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. No entity commented on the draft on the need for specific implementation provisions in Part II.

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, the Council concluded there was no need in this amendment cycle to revise the provisions of the 2014 Program. No entity commented on the draft to object to this approach. And 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 (2020 Addendum, Part II, at 4-5), 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 draft Addendum included the following provisions related to artificial production and program performance, provisions to be finalized later in 2020:

- *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 Westslope 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 specific recommendations and comments 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 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. However, after reviewing the comments on the draft, the Council decided to include an explicit provision in Part II to this effect – that is, explicitly recognizing the renewed implementation commitments in the 2018 Accord Extensions – in a section entitled Program Measures. 2020 Program, Part II, at 9.

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 an 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 as described above, the Council is developing objectives and indicators for artificial propagation along with commitments to improved reporting on program performance as an aspect of Part I of the Addendum (to be finalized later in 2020).

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, 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 (to be finalized later in 2020), 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 draft objectives and program performance indicators as described above. The same provisions in the program and in Part I of 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 by project; for Bonneville to report annually on the number of juvenile fish released each year and the number of adults that contribute to harvest, are 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 and improving production performance indicators following the amendment process.

In further related comments on the draft Addendum, the Public Power Council called for the Council and the program to continue to promote hatchery production that supports and does not conflict with conservation objectives, including requiring implementation of the Hatchery Science Review Group recommendations as well as explicitly incorporating adaptive management strategies into program-funded hatchery efforts. The Public Power Council also called on the program to continue to support selective harvest methods and policies that reduce the incidental catch of ESA-listed and naturally spawning fish but increase harvest of hatchery origin stocks; assess the extent to which harvest slows recovery of naturally reproducing populations; and implement adaptive management strategies for harvest measures in the Program. Finally, the Public Power Council also commented that the Council should work with the region to assure that artificially produced fish are not exceeding the carrying capacity of freshwater, estuarine and marine habitat.

The principles and measures in the 2014 Program's Fish Propagation strategy are consistent with these comments, continuing to promote scientifically sound hatchery reform along these lines. 2014 Program, at 76-79. And, the program-funded hatchery programs do incorporate criteria intended to be protective of naturally spawning populations, based on HSRG and related guidelines; sophisticated monitoring and evaluation provisions related to the purposes of the facilities and their potential impacts; and adaptive management strategies linked to these objectives and monitoring and evaluation provisions - all of them regularly reviewed by the Independent Scientific Review Panel. For these reasons, the Council did not identify a need to revise the 2014 Program provisions or add a specific implementation provision to Part II based on these and similar comments and recommendations. The Council and its program do not manage, regulate, fund, or oversee harvest activities. But the program contains provisions intended to ensure that those who manage artificial production activities aimed at increasing harvest opportunities and those who manage harvest act to protect the survival and escapement of naturally spawning fish, including protections and requirements for ESA-listed fish. Of course, ESA review by the federal resource agencies of artificial production and harvest activities is aimed more directly at the same purpose. Finally, as detailed above, the Council understands the need to improve – and intends through Part I to improve how the program gathers information about, assesses and reports on the effectiveness of artificial propagation and other program strategies. The Council is aware of and intends to work with the fish managers to track possible carrying capacity and density dependence concerns as raised in the comments and in the Independent Scientific Advisory Board's reports.

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. *This recommendation and related comments on the draft Addendum from Bill Bakke are addressed in more detail in the section that follows on the 2014 Program's Wild Fish strategy. In summary, the Council concluded that both the Artificial Propagation strategy and project implementation focus appropriately on wild fish population protection 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 fish at levels above individual production activities to meet the population goals and objectives of the program.*

Bill Bakke's comments on the draft also included that the Council should develop and use information to evaluate effectiveness of hatcheries. He commented that the largest commitment of public funding in the basin toward fisheries is provided annually to the hatchery programs, yet without generating enough of the right information to evaluate their cost-effectiveness. The Council and the program should include an economic evaluation of hatchery production; report annually on the costs to provide hatchery fish available for harvest; and report annually on the cost effectiveness of the hatchery programs. *The Council and Bonneville generate and report information on program and project costs every year, including for program-funded production activities. The production projects also generate significant information annually on implementation and results, information that gets regularly reviewed by the Independent Scientific Review Panel. In deciding on program measures and project recommendations, the Council has no obligation to perform precisely the kind of economic analysis desired by the commenter. Information of that kind can be and has been generated by others and is also a welcome addition to the information available on program activities.*

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. Numerous recommendations and comments from individuals made a similar point.

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 basinwide 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 and protects a broader ecological purpose, and operates 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.

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, Part I, at 7-8, 10, 14-15 (to be finalized later in 2020). 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 (to be finalized later in 2020).*

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 (to be finalized later in 2020). 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, Part I, at 34 (to be finalized later in 2020).*

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 that 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 where 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.

In related comments on the draft Addendum, Bill Bakke noted that the program assumes that wild salmon and steelhead populations can be rebuilt and recovered using hatchery fish supplementation even though in his view there is no scientific support for that assumption. He also criticizes the program for not establishing viability criteria and escapement requirements for wild salmon and steelhead by natal stream ensuring that recovery of species threatened with extinction is impossible; and that the program also ignores the genetic and ecological impact of naturally spawning hatchery fish on wild salmon and steelhead. Improving habitat without commitment to fully seed the habitat with wild salmon and steelhead ignores the potential and purpose for habitat improvements. He recommends revising the program's subbasin plans to include that spawner requirements by species be used as the fundamental structure of the program for recovery for species threatened with extinction. As a general conclusion, Bakke commented that the structure of the fish and wildlife program cannot prevent extinction of wild salmon and steelhead in the Columbia River basin; fails to recognize that the hatchery program and the fishery cannot be sustained by having access to healthy and abundant wild populations; is not focused on performance measures that benefit the public trust responsibility for actions paid for with public funds; and instead is focused exclusively on harvest and hatchery production to benefit user groups.

There are many aspects of the 2014 Program and of Part I of the draft program Addendum consistent with these recommendations and comments (see the findings on recommendations for the 2014 Program, at 288-94). The 2014 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; Part I of the draft Addendum (to be finalized later in 2020) 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. The program's subbasin plans (and ESA 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, while also recognizing the need for further development of 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 or an ESA 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 and comments by Mr. Bakke are more within and directed at 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 and protection measures get implemented to address 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 in general that mitigation and protection measures take 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. First, 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 in the Tribe's perspective 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 mitigation commitments for losses 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 the Spokane Tribe's recommendation in particular, the Council included in Part II of the draft Addendum a provision calling 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.

In response to the draft, the Spokane Tribe commented in support; applauded the Council for recognizing the inadequate mitigation and funding devoted to addressing the impacts caused by the construction and continued operation of Grand Coulee and Chief

Joseph Dams; and requested that the program language leave no room for interpretation, suggesting edits that would strengthen the language further to that end. Comments in support also came from the Confederated Tribes of the Colville Reservation, Kalispel Tribe, U.S. Fish and Wildlife Service, Spokane Riverkeeper, and others.

Bonneville commented on the draft that the Council needs to present an analysis supporting its reasoning on this point, particularly when the effect of the Council's conclusion is an expectation of a significant ramp-up in work and investment by Bonneville. Bonneville added that in its view it has consistently followed the guidance of past programs, none of which identified what is now being cast by the Council as an "obvious gap" in mitigation; that mitigation Bonneville has funded in the Upper Columbia over the years, consistent with past and current Council programs, demonstrates the adequacy of the existing mitigation for purposes of compliance with the requirements of the Northwest Power Act, including examples of recent hatchery construction and improvement actions for Chinook, sturgeon, burbot, and trout; habitat restoration actions mitigating operational impacts; and new resident fish mitigation protecting thousands of acres in Montana, including extensive trout habitat that also provides significant wildlife benefits. Snohomish PUD commented with concerns that the provision suggests exempting the cost of mitigation for blocked areas from the management approach of maintaining fish and wildlife costs at or below inflation, jeopardizing the foundational purposes stated in section 2 of the Northwest Power Act.

Based on the Spokane Tribe's recommendation in particular and on the other recommendations and comments in support, Part II of the 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 Lake Roosevelt and the Spokane River arm of Lake Roosevelt above Grand Coulee and Chief Joseph dams, as well as ongoing operational impacts. The Council expects Bonneville to begin a comprehensive effort over the next five years to intensify, expand, and then sustain the mitigation effort for this part of the basin, increasing significantly the level of mitigation for these losses, and to do so without compromising the substantive protection and mitigation activities elsewhere in the basin. In developing this comprehensive effort, Bonneville should work with the Spokane Tribe of Indians and with the Tribe's list of mitigation measures recommended to the Council as a starting point, while both should also consult with the Confederated Tribes of the Colville Reservation and Washington Department of Fish and Wildlife as co-managers in that area, coordinating 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. The Council concluded that this

provision was necessary because this part of the basin has suffered the loss of anadromous fish and other fish and wildlife species directly due to hydropower development at a scale at least comparable to, and in most cases 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. 2020 Addendum, Part II, at 4-5.

In considering Bonneville's comment that the Council needs to present an analysis supporting its reasoning behind this provision, the analysis begins with the following point: Salmon and other fish and wildlife losses in the area above Grand Coulee due to the development of Grand Coulee and Chief Joseph dams – and the ongoing effects of operating Grand Coulee -- are as great or greater than anywhere in the basin. Information presented by the Spokane Tribe and others to the Council in the 1980s, to the Columbia Basin Partnership effort in the last couple of years, and to the Council in this and recent amendment processes include estimates of substantial salmon and steelhead historical production and losses both for the entire portion of the salmon-accessible river above Grand Coulee/Chief Joseph and also particularly for the portion of that area covered now by Lake Roosevelt and into the Spokane River tributary the reservoir. This information includes estimates of annual salmon and steelhead harvest by members of the Tribes in this area that range up to a million and a half to two million, with estimates for harvest by Spokane Tribe members in the Spokane River and in the Kettle Falls area in the neighborhood of 300,000 per year. The Spokane Tribe's perspective in its recommendations is that this is an area "where 40 percent of documented losses have occurred" due to hydropower. Whether or not that percentage is precisely correct, the magnitude of losses to salmon and steelhead in this blocked area and to these people directly due to federal hydropower development is comparable to or greater than elsewhere in the basin. Beyond the complete loss of large numbers of anadromous fish, the development of these projects also significantly damaged other native fish and aquatic species and their habitats in this portion of the mainstem and Spokane River, including sturgeon, Bull Trout, Redband Trout, freshwater mussels, and others. The recurring changes to reservoir and river habitat in this area due to the operations of Grand Coulee present additional and substantial difficulties for native fish survival and productivity. And wildlife losses due to the development and operation of Grand Coulee are again of a magnitude as substantial as elsewhere in the basin. [Documents supporting these points are in the administrative record of the Council's amendment process.]

While the fish and wildlife losses imposed by hydropower development and operation in the Lake Roosevelt/Spokane River area may be as substantial as anywhere in the basin, Bonneville-funded protection and mitigation under the Northwest

Power Act is not. In FY 2019, for example, mitigation actions to address the Lake Roosevelt/Spokane River area as recommended and sponsored by the Spokane Tribe totaled under \$3.5 million invested, spread over a half dozen projects and with the bulk of the funding going to two activities, data collection and monitoring in Lake Roosevelt and operations and maintenance funding for the one Spokane Tribal Hatchery that produces trout and kokanee.

To provide perspective as to the disparity of mitigation, hydropower development has similarly severely impacted native fish and wildlife populations in, for example, the mainstem Columbia and Umatilla and Walla Walla tributaries and other areas within the historic territory of the Confederated Tribes of the Umatilla Indian Reservation. Largely through the recommendations of the Umatilla Tribes, by 2008 Bonneville committed to fund a broad suite of protection and mitigation actions recommended, sponsored, implemented and managed by the Umatilla Tribes, with 44 mitigation activities/line items that totaled an annual commitment of expense money of over \$15 million per year and a \$12 million commitment of capital funds over ten years. Bonneville renewed that implementation commitment in 2018 covering 31 different activities at an expense total alone of \$14 million/year. Activities funded cover the range of impacts and mitigation needs, including salmon and steelhead production facilities in the Umatilla, Walla Walla and Grand Ronde subbasins; fish passage operations in the Umatilla River; fish habitat improvement activities in the Umatilla, Walla Walla, Grand Ronde and Tucannon subbasins targeted at salmon, steelhead and native resident fish improvement; natural production monitoring and evaluation in the Umatilla; Pacific Lamprey research and restoration; freshwater mussel research and restoration; flow assessments and water rights acquisitions; wildlife land acquisitions and land management; and more. Substantial mainstem flow and passage operations to protect and benefit fish important to the Umatilla Tribes are also part of the suite of protection and mitigation actions for which Bonneville carries the financial obligation.

Similar examples are found in nearly every part of the Columbia basin heavily affected by hydropower development and operations and linked to the protection and mitigation recommendations of affected state fish and wildlife agencies and tribes. For just one more example, to address hydropower impacts to native resident fish and wildlife in the Kootenai River due to the development and operation of Libby Dam, Bonneville has committed to fund through a long-term agreement a substantial set of protection and mitigation actions to improve conditions for native fish and wildlife and their habitats as recommended, sponsored, and managed by the Kootenai Tribe of Idaho, totaling roughly \$11 to \$13 million annually in 2018-2022.

None of this is meant to call into question these other implementation commitments. They are all appropriate in scale, breadth and commitment of resources in light of the impacts from the development and operation of hydropower facilities on the fish and wildlife in these areas and relied on by these nations and their people. The point is that the direct impacts and losses to fish and wildlife due to federal hydropower development and operations in the Lake Roosevelt/Spokane River area and related to the Spokane Tribe and its members are at least comparable if not greater than the losses being mitigated for by these other programs. And yet the breadth and scale of mitigation being implemented is not comparable.

For more than a decade the Spokane Tribe has developed and recommend for inclusion in the program a broad and extensive package of protection and mitigation measures consistent with the needs in the area, that is, consistent with the scale and scope of the problems caused directly by federal hydropower development and operation. For example, in 2008 the Spokane Tribe recommended for the Council’s Fish and Wildlife Program – and the Council included in the resulting 2009 Program - a set of sixteen different aquatic and terrestrial measures to help mitigate for the hydropower development and operational losses and impacts across a range of species in their historic areas. The Council then included a provision that the measures in this area (and any area not yet covered by an implementation agreement) be the basis for the development of a multi-year action plans, with Bonneville expected to work the Council and the sponsoring entity “to estimate multi-year implementation budgets and secure funding commitments that ensure adequate funding for these action plans.” 2009 Fish and Wildlife Program, at 14, 59, 91 and 94 (App E); [Spokane Tribe 2008 Recommendations](#). For the 2014 Program, the Spokane Tribe again recommended a similar suite of mitigation measures, which the Council again included in the program, and the Tribe expressed concern over the lack of comparable mitigation implementation over the intervening years. See 2014 Program, at 83-86, 110-12, 195 (Appendix O); 296, 299 [Spokane Tribe 2014 Recommendations](#).²

In this amendment cycle, the Spokane Tribe has again recommended an evolved set of the same protection and mitigation actions for funding and implementation to address the impacts to fish and wildlife from the development and operation of Grand

² Note also that since the mid-1990s the Spokane Tribe has also recommended to the program a set of reservoir operations and objectives for Grand Coulee that would help stabilize the reservoir and river habitat to protect fish in the lake and river. Implementing these operations in full has proven difficult given all the operational demands on Grand Coulee, for both power and fish needs. The absence of stable reservoir and riverine habitats and the dramatic impacts of operations on those habitats and resources simply adds to the need for increased mitigation implementation efforts to protect fish and their habitat conditions.

Coulee Dam. [Spokane Tribe 2018 Recommendations](#). Measures recommended for implementation include (most of which are the same as over the last ten years):

- *Spokane Tribal Hatchery (existing). Partially mitigates for Grand Coulee Dam - Resident Fish Substitution. Raises salmonids for recreational and subsistence purposes*
- *Lake Roosevelt Fisheries Evaluation Project (existing). Partial mitigation for Grand Coulee Dam - Resident Fish Substitution. Monitoring and evaluation of artificial production program, hydropower impacts and status of native fish populations*
- *Lake Roosevelt Sturgeon Recovery Project (existing, but greater in scope than implemented). Recovery of resident population(s) of white sturgeon in the upper Columbia River*
- *Lake Roosevelt Sturgeon Conservation Hatchery Three-Step (continued planning)*
- *Construction of Lake Roosevelt Sturgeon Conservation Hatchery (not implemented)*
- *Operations and Maintenance of Lake Roosevelt Sturgeon Conservation Hatchery - Includes completion of HGMP (not implemented)*
- *Pilot - Seeding and Fertilization in Lake Roosevelt to improve habitat and food resources. (not implemented)*
- *Large scale - Seeding and Fertilization in Lake Roosevelt to improve habitat and food resources (not implemented)*
- *Redband Trout Repatriation Project (not implemented)*
- *Remove non-native predators using established methods (not implemented)*
- *Spokane Tribe Fish Habitat Enhancement Project (not implemented)*
- *Lake Roosevelt Fish Habitat Enhancement Project (not implemented)*
- *Feasibility Study - Reintroduction of Anadromous Salmon above Grand Coulee Dam (one-year habitat assessment implemented in FY 2019 at \$125K; no implementation commitment beyond that)*
- *Mussel Assessment - Spokane Arm of Lake Roosevelt & Columbia River Adjacent to the Spokane Indian Reservation (not implemented)*
- *Spokane Tribe of Indians Wildlife Mitigation Project - (Grand Coulee Dam construction and inundation impacts)*
- *Spokane Tribe of Indians Wildlife Mitigation Project - (formerly Blue Creek Winter Range) Complete land acquisitions to meet the identified HEP losses related to Grand Coulee Dam construction and inundation losses*
- *UCUT Wildlife Monitoring & Evaluation Project (UWMEP) - Project will conduct Wildlife M&E efforts for the five UCUT Tribes on a regional scale for consistency/adequate effort.*

This is a broad suite of protection and mitigation measures intended to address impacts to fish and wildlife resources and habitats directly affected by hydropower

development and operation, similar in scope and breadth to the broad suites of mitigation actions implemented elsewhere in the basin. The Spokane Tribe supported this recommendation with an explanation similar to the explanation here as to why it is time to increase the implementation of mitigation in this area at a broader scope and scale commensurate with the losses.

The Council does not mean by including this provision in Part II that Bonneville must fund everything on the list, nor that an increased implementation effort has to occur in just one year. It does intend that Bonneville and the Spokane Tribe, working with the co-managers in the region, increase substantially the mitigation implementation in this area before the next time the Council amends the program.

Bonneville commented that it has funded mitigation in the Upper Columbia over the years consistent with past and current Council programs, with recent examples including “hatchery construction and improvement actions for Chinook, sturgeon, burbot, and trout; habitat restoration actions mitigating operational impacts; and new resident fish mitigation protecting thousands of acres in Montana, including extensive trout habitat that also provides significant wildlife benefits.” None of those actions, save the one trout production facility, relate to or address the mitigation needs in Lake Roosevelt and Spokane Rivers caused by the hydropower developments and operations at Lake Roosevelt. Mitigation implementation by Bonneville partly intended to address hydropower impacts and salmon losses due to the development and operation of Chief Joseph and Grand Coulee dams can be found through the implementation commitments with the Confederated Tribes of the Colville Reservation. But these activities do not address the impacts to fish and wildlife and habitats in the Lake Roosevelt and Spokane River areas, nor the losses sustained by the nation and the people in that area. Protection and implementation under the Northwest Power Act is to address impacts and not entities. However, the program is based on giving due weight to fish and wildlife agencies and tribes to understand the mitigation impacts and define and recommend the mitigation needs in their areas as they affect fish and wildlife resources they manage. This is as true for the Spokane Tribe in the Lake Roosevelt/Spokane River area as for other entities in the basin under the program.

Finally, the Council appreciates the comments of Snohomish PUD and others concerned about stabilizing the program and its annual costs. The Council also understands the need to and the benefits of holding steady and certain the costs of the fish and wildlife program over a substantial period of years. But that can occur only after action is taken to close this one obvious gap in the implementation commitments needed to address the direct effects of the federal hydropower development and operations on fish and wildlife in the Lake Roosevelt/Spokane River area.

The Spokane Tribe of Indians and others also recommended a number of funding mechanisms to make sure this mitigation implementation occurred, including allocating at least 45 percent 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 percent 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. In comments on the draft, the Nez Perce Tribe, in comments echoed by the Columbia River Inter-Tribal Fish Commission and its other member Tribes that the Council provide assurances that in the effort to fund and implement near-term priorities described in Part II, described ongoing work will not be jeopardized, i.e., that money will not be shifted away from the Nez Perce Tribe and others working to achieve healthy and harvestable fish populations in the Snake Basin.

As described above, the Council called on Bonneville to increase significantly the level of mitigation for the losses in the area above Chief Joseph/Grand Coulee, and to do so 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 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 River 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 draft of Part II contained a provision calling on Bonneville and others to continue to make progress on the phased approach to assess the feasibility of anadromous fish reintroduction above Chief Joseph and Grand Coulee dams. Draft 2020 Addendum, at 37. Comments on the draft in support of this provision came from the Spokane Tribe of

Indians, Confederated Tribes of the Colville Reservation, Washington Department of Fish and Wildlife, NOAA Fisheries, U.S. Fish and Wildlife Service, Spokane Riverkeeper, Sierra Club, Orca Network, Whale and Dolphin Conservation, and a number of other organizations and many individuals. The Spokane Tribe, echoed by many of the environmental organizations and individuals, commented that the provision should be expanded and strengthened to detail what has been done so far and what the next steps should be and on what timeline and with what agency or agencies responsible; prioritize completion of Phase One; describe the terms for any forum the federal agencies might establish to discuss this effort; and other matters.

The Public Power Council commented that studies and proposals related to reintroduction of anadromy above Chief Joseph/Grand Coulee must be approached with substantial caution and full public transparency; the Council should assess and share the relevant details about costs weighed against established metrics developed for other juvenile fish collectors in the Northwest; and reintroduction should not be prioritized until mitigation opportunities in the lower basin are completed, as there remain many opportunities to improve existing habitat below these dams. Western Montana G&T Cooperative commented that the Council should very carefully consider the importance of these hydroelectric projects to reliable and affordable hydropower generation, and ensure the compatibility of any reintroduction efforts with the hydropower generation provided, so that any conflicts that might serve to reduce or impact hydropower generation be identified and avoided.

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 Addendum the provision emphasizing that Bonneville and others are to continue to make progress on the program's phased approach to evaluating the possibility of reintroducing anadromous fish above Grand Coulee and Chief Joseph dams, a measure and emerging priority that continues to receive substantial support in the amendment process from many governmental and non-governmental entities. 2020 Addendum, Part II, at 5. 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. The Council also agrees that generation from these projects is an important part of the Northwest power supply – nothing about the effort so far has indicated any conflict with that generation capability. Because consideration of anadromous fish reintroduction is but one aspect of the broader effort and priority to protect and mitigate fish and wildlife losses above Grand Coulee due to the development and operation of these dams (as described above), the

Council does not agree with the Public Power Council comments that this effort is a lesser priority than mitigation efforts and habitat restoration below these dams.

Several entities (Burns Paiute Tribe, Nez Perce Tribe, Shoshone-Bannock Tribes, Upper Snake River Tribes, and U.S. Fish and Wildlife Service) 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.

In comments on the draft of Part II, the Upper Snake River Tribes Foundation reiterated its recommendation that the Council include in the Addendum their Fishery Resource Management Plan for the Upper Snake River Basin, commenting that the management plan provides a long-term vision for salmon and steelhead reintroduction into the currently blocked but historical anadromous fish habitat of the Upper Snake River Basin, and that reintroduction is one of the highest priorities for USRT member tribes and consistent with the strategy and measures in the 2014 Program. Among other details the goals of the plan are to use a careful phased approach to re-establish anadromous fisheries on unlisted, hatchery-origin spring/summer Chinook salmon and/or steelhead in select tributaries to provide subsistence, cultural, and recreational harvest opportunities; restore naturally reproducing unlisted populations of salmon and steelhead within select tributaries upstream of the Hells Canyon Complex to meet harvest, cultural, and ecological needs; and restore fall Chinook salmon in the mainstem Snake River as a long-term goal.

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 is consistent with the recommended investigation into and vision for possible reintroduction into the Snake River above the Hells Canyon Complex, as one possible aspect of a broad effort at mitigation for the effects of hydroelectric development and operations in the Snake River. 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. The Upper Snake River Tribes' Fishery Management Plan is not yet at the stage of an implementation commitment, and so the Council did not include a specific provision relating to it in Part II. There will be a time to consider inclusion of the specific measures in this management plan the next time the Council amends the main text of the program. The Council did include in Part II, consistent with the 2014 Program and consistent with the goals of the Upper Snake plan, a provision expressing continued support for the implementation over the next five years of collaborative efforts to restore and enhance ceremonial fisheries in blocked areas on hatchery-origin salmon and steelhead through trap and transport operations. 2020 Addendum, Part II, at 5.

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 Food 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 subbasin 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 transaction conservation actions in Whychus Creek and the lower Crooked River. Michael Ogle recommended the Council encourage Pacific Power to provide passage at Newport Dam in the Deschutes. Mark Davis commented to add the Deschutes River Basin to the Addendum's Mitigation in Blocked Areas and address fish mortality from Bend Hydro Dam. In comments on the draft of Part II, the Spokane Tribe of Indians expressed support for all Tribes in the pursuit of reestablishing anadromous fish within their waters, and into all blocked current and available historical habitats, encouraging the Council to utilize the framework of the 2014 Program's Anadromous Fish Mitigation in Blocked Areas Strategy to pursue measures to implement that strategy throughout the basin.

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, so that the abundance of native fish species might 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 areas 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 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 hydrosystem. 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. The Spokane Tribe and others also recommended funding mechanisms regarding the mitigation work in this area. *These recommendations were addressed in the last section (and in Part II of the 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, Westslope 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 (to be finalized later in 2020). This effort is described in general terms 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 (to be finalized later in 2020). 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 when possible. 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 (to be finalized later in 2020).*

The Kalispel Tribe of Indians recommended that 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.

In comments on the draft, the Kalispel Tribe reiterated the recommendation that the Council include an implementation provision in Part II calling for the federal agencies to restore upstream passage for Bull Trout and other native resident fish at Albeni Falls Dam by 2024, to be embedded in a provision recognizing a broad range of protection and mitigation measures in this area for timely implementation, including habitat enhancement and dam operation measures particularly aimed at water temperature problems and work to reduce or eliminate non-native predators, including Northern Pike. And in response to a Council reaction regarding whether these matters are already covered in the Kalispel Accord, the Kalispel Tribe commented that it was important for the Council to capture in the program the implementation progress and commitments under the Accord.

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 of the program measure as recommended. The Council also 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. As noted above, the Kalispel Tribe commented that the Council should include in the program the implementation developments and commitments with regard to that Accord from their perspective. Rather than be specific about the implementation details, as the implementation commitments do exist under the umbrella of the Accord, the Council included in the new section on Program Measures reference to the Kalispel Tribe Accord implementation developments, including the Kalispel Tribe's understanding about the latest agreements and commitments regarding upstream passage of native resident fish at Albeni Falls Dam; habitat enhancements and operational changes at the same dam to improve water temperature conditions; and Northern Pike removal efforts in the Pend Oreille River. 2020 Addendum, Part II, at 9.

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 mussels, and to develop and evaluate various means to supplement natural production. 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 Sierra Club commented in support of funding and work to restore freshwater mussels to watersheds they have historically occupied, providing important ecosystem services as well as restoring historic first foods used by native people.

The Council recognized in the 2014 Program and in the Native Aquatic Focal Species portion of Part I of the draft 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 (to be finalized later in 2020). 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 Addendum. No entity commented on the draft of Part II to object to this approach.

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 Scientific 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 (to be finalized later in 2020). The Council did not identify any particular implementation need that required attention in Part II of the Addendum.*

Chelan Public Utility District submitted a recommendation (and subsequent comments) 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 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 also supports and appreciates Chelan PUD's efforts to help combat the threat of northern pike, the subject of a provision in Part II discussed above. 2020 Addendum, Part II, at 8. Finally, the Council did include a provision in Part II, in a section entitled Program Measures, recognizing the implementation commitments by Chelan PUD and other mid-Columbia PUDs, in their FERC licenses and associated habitat conservation plans and biological opinions. Id, at 9-10.*

Finally, the Confederated Salish & Kootenai Tribes supported a provision directing Bonneville to fully support long-term operation and maintenance funding of 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 assurances 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. The Council is considering adding a provision to this effect in finalizing Part I of the draft Addendum.*

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 recommended 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. In comments on the draft, the U.S. Fish and Wildlife Service called on the program to acknowledge that the Service has completed a revised recovery plan for Kootenai River White Sturgeon and ensure that the program is consistent with that plan.

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 – provisions that were the source of significant comment that will be assessed as the Council completes Part I. The Council also included in the draft of Part I an indicator for addressing through research and analysis the program's critical uncertainties, which includes 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 (to be finalized later in 2020). Regarding sturgeon in the lower Columbia and Snake rivers, implementation of research, planning, and protection and mitigation activities takes place through a handful of ongoing commitments and should continue. Consistent with the recommendations and comments, the Council identified in Part II of the Addendum two particular items that needed emphasis: evaluation of 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 in sturgeon population monitoring between McNary and Priest Rapids dams and in the lower Snake River. 2020 Addendum, Part II, at 9. The Washington Department of Fish and Wildlife and Chinook Indian Nation commented in support of these provisions in the draft. Bonneville commented that the language in the draft seemed to confuse Bonneville's role as implementer with a provision aimed at developing program strategies. The Council modified the language in response.

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 for that river, including the White Sturgeon program as recommended and implemented by the Kootenai Tribe of Idaho, US Fish and Wildlife Service, and others. As discussed above, the Council included in Part II the operational changes at

Libby Dam recommended by Montana and the Kootenai Tribe of Idaho. 2020 Addendum, Part II, at 7.

Finally, the Spokane Tribe of Indians recommended the implementation of a set of research, protection, mitigation and propagation measures regarding upper Columbia sturgeon, as part of the broad set of protection and mitigation measures recommended for implementation in the blocked area above Grand Coulee Dam. *This recommendation has been addressed in the Addendum as explained above, in the section on blocked area mitigation. 2020 Addendum, Part II, at 4-5.*

Lamprey

The 2014 Program also includes 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 of larval lamprey habitats due to load-following or special hydrosystem 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.

In comments on the draft of Part II directly related to lamprey, the Public Power Council commented that the Council should continue to support and expand where feasible (within the existing budget) programs that have successfully improved lamprey passage survival and reintroduced populations into extirpated areas, noting several actions to date at the dams have improved lamprey passage survival and improved lamprey populations in the Lower Columbia River Basin. The Sierra Club commented in support of funding and work to restore lamprey and freshwater mussels to watersheds they have historically occupied, providing important ecosystem services as well as restoring historic first foods used by native people.

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 appropriate, 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 (to be finalized later in 2020). 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 with regard to lamprey to emphasize in Part II of the Addendum. Based on the recommendations and then comments on the draft, the Council did add a provision on Program Measures to Part II to recognize the implementation commitments in the Accord Extensions, which include implementation commitments with regard to lamprey. 2020 Addendum, Part II, at 9, discussed below in the section on Program Measures.

Eulachon

The 2014 Program included a specific Eulachon strategy intended to increase understanding, protection, and restoration of Eulachon in the Columbia 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 recommended 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 funding 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 recommendations. 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 included 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 for the Columbia River to assess whether Eulachon biomass is stable and/or increasing, all as part of program performance. Draft 2020 Addendum, at 21 (to be finalized later in 2020). 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 Addendum. Nor did the Council alter or amend the list of emerging priorities in the 2014 Program. The Council did explicitly recognize the implementation commitments in the 2019 Columbia River System Biological Opinion, which included a consultation on the effects on listed Eulachon. 2020 Addendum, Part II, at 9. The recent biological opinion and the Eulachon recovery plan identify both the uncertainties with regard to improving the status of Eulachon and a set of assessment and conservation measures to address that status and the uncertainties. The 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 all part of the Council's program as well, per the provisions of the Mainstem Flow and Passage provisions of the 2014 Program and the provision in Part II of the Addendum explicitly recognizing the biological opinion, and provide sufficient direction as to what to implement so that further direction specifically on Eulachon in Part II of the Addendum was 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. No entity commented on the draft Addendum to object or raise concerns about this approach with regard to Part II.

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 adds 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. In comments on the draft program Addendum, Bill Bakke commented that the program's subbasin plans are an important accomplishment that are not being used as they should be as a structure for further developing, implementing and assessing the fish and wildlife program and for native species recovery; and that the plans are not complete because while habitat conditions are addressed and solutions recommended, none include spawner escapement requirements for wild salmon and steelhead, and so a general commitment to improve habitat without commitment to fully seed the habitat with wild salmon and steelhead ignores their potential and purpose.

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. Comments related to the program and naturally spawning fish are addressed above under the Wild Fish strategy.

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; and 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.

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. But in comments on the draft of Part II, a number of these same entities repeated the recommendation that the Council explicitly recognize especially the updated

implementation commitments that occurred after 2014, with an argument that these cover such a large and critical part of the program that it would be a mistake not to acknowledge them explicitly. In response, the Council added a section to Part II on Program Measures to do just that – to acknowledge implementation commitments post-2014 as well as others not properly captured in the text of the 2014 Program. This includes the Accord extensions and the 2019 CRS Biological Opinion and its associated spill and estuary implementation developments. 2020 Addendum, Part II, at 9-10. The provision also responds to recommendations and comments from Chelan PUD and NOAA fisheries to comprehensively capture the implementation commitments made in the context of FERC licensing for non-federal hydroelectric projects, including in associated habitat conservation plans and biological opinions. Id.

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 – the blocked area above Grand Coulee/Chief Joseph dams - is suffering from a lack of appropriate mitigation implementation consistent with the program. 2020 Addendum, Part II, 4-5; see discussion above under the Blocked Area Mitigation Strategy.

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.

Finally, 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 biological opinion 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 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.

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 and comments related to the investment strategy and to related topics, including how decisions about what to fund are made and how to manage the overall fish and wildlife budget. These are grouped into a number of topics as follows:

Program Priorities

Many recommendations concerned the list of emerging priorities, recommendations either to retain some element of the emerging priorities or to 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, the Council expects Bonneville and others to continue to make progress in implementing these program priorities, including the emerging priorities. 2020 Addendum, Part II, at 3, 10-11. 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, Pacific Lamprey and Eulachon. The Washington Department of Fish and Wildlife later commented that the draft of Part II of the Addendum is generally consistent with WDFW near-term priorities and cost-effective implementation of program strategies. Further recommendations related to program priorities are addressed below.*

In comments on the draft Part II, the Columbia River Inter-Tribal Fish Commission and its member tribes – the Nez Perce Tribe, Confederated Tribes of the Warm Springs Reservation of Oregon, Confederated Tribes of the Umatilla Indian Reservation, and the Yakama Nation – submitted a coordinated comment to the effect that funding and implementation of current and ongoing work under the Program should not be

jeopardized to fund and implement new emerging and near-term priorities. *The Council agrees and has been careful in the 2014 Program and in several places in Part II to be explicit that existing programs and priorities are not to be compromised in meeting the needs of a discrete set of emerging and unimplemented priorities, or compromised in the interests of budget management and efficiencies. See 2014 Program, at 114-17; 2020 Addendum, Part II, at 3, 4-5, 10-12.*

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 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 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, and commented on the draft to add that funding needs to be equitable across the basin. *The Council did not remove or change the emerging priorities list – none has been implemented in a way that would make it 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 that this area needs a significant increase in the level and extent of mitigation implementation, as discussed in the section above on the Blocked Area Mitigation Strategy. 2020 Addendum, Part II, at 3, 4-5, 10-12.*

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, 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 as program priorities, no matter what the funding vehicle may be. *The Council concurs – preserving funding and implementation of the existing protection and mitigation priorities and activities of the program does not depend on the funding vehicle.*

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 programwide 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” the program needed had two specific elements: one is 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 the second was a handful of implementation needs that are not likely to occur unless explicitly stated and emphasized by the Council. That was the purpose of developing the program addendum, with the latter set forth in the final Part II of the 2020 Addendum.

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 1) the principle that Bonneville fulfill its commitment to meet all of its fish and wildlife obligations; 2) 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; 3) 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 4) 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 implementation of the measures in the subbasin plans is 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 (to be finalized later in 2020). 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 program's 2020 Addendum.*

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 Addendum.*

American Rivers recommended a list of program priorities intended to improve declining salmon runs affected by 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, the mainstem, and the 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 Rivers was not the only entity to mention the CRSO NEPA process - several entities referenced the EIS in progress and recommended or later commented 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 in the 2014 Program and in the Addendum 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.

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. Bonneville further 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.

In related comments on the draft, Bonneville along with the Public Power Council, Snohomish PUD, Western Montana G&T Cooperative, and commenters at public hearings representing Idaho Consumer-Owned Utilities, Flathead Electric Cooperative, and Lincoln Electric Cooperative emphasized the need to manage and control the costs of the fish and wildlife program, and to the extent there are new priorities to implement and inequities in program funding to address, the Council and Bonneville should develop and apply strategies for prioritization, cost-effectiveness, and careful budget management to make that happen, not increased expenditures, as part of the effort to help keep the region's power supply economical.

The Council appreciates the comments of Bonneville and the Bonneville customers and will look for various opportunities to work with Bonneville to manage costs and maximize outcomes as noted. The Council's ramped up commitment to reporting and assessing program performance should align well with this aspiration. The Council also appreciates Bonneville's 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. But the Council has also noted, throughout Part II of the 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.

On the other hand, the Nez Perce Tribe commented on the draft Part II that the Addendum needs to accurately portray funding needs. Implementing the program and

achieving the program's goals requires funding commensurate with the scope of measures in the Program, and the Council's confidence that existing funding levels are generally adequate to meet program needs is inaccurate and misleading as the program has not met its goals, and populations in the Columbia River cannot currently be described as healthy and harvestable. The Nez Perce Tribe recommended that statement be replaced with a statement about the urgency of achieving program goals and sufficient funding to realistically achieve those goals.

In similar coordinated comments on the draft, the Columbia River Inter-Tribal Fish Commission joined by its member tribes including the Nez Perce Tribe, Yakama Nation, Confederated Tribes of the Umatilla Indian Reservation, and Confederated Tribes of the Warm Springs Reservation of Oregon noted that while they were encouraged to see "climate change" and "ocean conditions" on an identified set of near-term priorities for implementation and funding, they were otherwise concerned that the set of priorities is not complete or comprehensive. In their view, the focus in the draft is on blocked area populations and issues downstream of Bonneville Dam and fails to reaffirm measures and issues affecting fish and wildlife populations that directly impact the CRITFC-member Tribes, and that while the Addendum may not explicitly discount measures in the Snake Basin and mainstem Columbia, the reality of capped/flatlined budgets means funding "new" or "emerging" priorities requires shifting/reducing money currently addressing ongoing priority measures. The commenters also noted that the Council expresses some support for BPA's 2018-2023 Strategic Plan objective for carefully managing fish and wildlife program costs to at or below inflation, and yet the populations in the Columbia River cannot currently be described as healthy and harvestable. Thus, the Council should acknowledge that new, different, or additional measures may be required in the future if the performance indicators adopted into the program through this Addendum process reveal that the current program is not achieving its goals. The Council leadership and the program must have a sense of urgency and sufficient funding to realistically achieve Program goals.

In response to the comments of the Nez Perce Tribe and CRITFC-member tribes, the Council agrees that the Council did not assess whether the amount of funding Bonneville currently provides to the fish and wildlife program is sufficient to meet the goals of the program and the Power Act's ultimate goal of protecting, mitigating, and enhancing fish and wildlife affected by the development and operation of the hydropower system. In these Part II provisions, the Council is trying to make a different and less definitive point: recognizing Bonneville's expressed need for budget stability and acknowledging that Bonneville is funding and implementing a substantial suite of actions that match program measures and objectives – much of it through direct mutual multi-year implementation agreements with the region's agencies and tribes - while also

recognizing a need to fund and implement a small set of obvious gaps in program implementation without compromising the existing productive work. That might mean budget stability can be achieved for a number of years but at a level somewhat different than this fiscal year's budget target. At bottom, implementing the work is what is important to the Council. For the near-term, implementation commitments are set for much of the most important parts of the fish and wildlife program, which is precisely why those parts needed less or little attention in this amendment process. It could be that new, different, or additional program measures may be required in the future if performance reporting reveals that the current program is not achieving its stated goals for protecting against or mitigating for hydropower losses – that is precisely the point of ramping up the program performance effort.

Emerging Program Priority – Long-term Maintenance of Program Priorities

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 on the recommendations and on the draft related to 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 of the program's investments; that the Council, Bonneville, and managers discuss advantages and disadvantages of 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 and 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 projects. 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 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. In comments on the draft, the Idaho Department of Fish and Game reiterated its support for developing and implementing an asset management plan as a program emerging priority. The U.S. Fish and Wildlife Service commented that infrastructure depreciation, especially of hatchery facilities, is becoming a significant concern; if overall budget increases are expected to be limited to the rate of inflation, expect the cost of maintaining the hatchery system to consume a larger proportion of the program budget in near future.

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. One of the challenges, as noted in comments, is how to fund the needed long-term maintenance, consistent with other programs and priorities, that will be part of the work on this effort over the next few years. 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 (to be finalized later in 2020).

Budget Allocation among Anadromous Fish, Resident Fish and Wildlife

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 percent anadromous fish, 15 percent resident fish, 15 percent 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 percent 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 percent 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 the program's allocation to anadromous fish, 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 enhancing 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 program amendments in 2019-20. In comments on the draft, the Spokane Tribe of Indians reemphasized the need to recognize and resolve the inequality of funding across the program and the basin.

As discussed above in the section on the Mitigation in the Blocked Areas strategy, the Council understands the frustrations in particular with the lack of implementation of mitigation activities in the blocked area above Grand Coulee/Chief Joseph dams. The Council addressed that topic in Part II of the 2020 Addendum, at 4-5. 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 as an obstacle or limit on making this happen.

Budget Management and Implementation Efficiencies

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, and 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 and 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.

In the draft of Part II, the Council addressed these comments in a section on “how the program is implemented.” In that section the Council acknowledged and applauded Bonneville’s project and program management in general, but also agreed on the need for and intent to exercise greater oversight over program and project management to ensure productive program work is not compromised through project and budget management activities. This effort would include 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. As one part of these provisions, in seeking some type of threshold or trigger for identifying when changes in project implementation are occurring that warrant further consideration, the Council proposed that Bonneville report prospectively to the Council when Bonneville proposes to decrease or increase individual project budgets by five percent or more. Id., at 42. Comments on the draft included:

A number of commenters did agree that Bonneville’s budget management activities can result in difficulties maintaining productive work. For example, the Shoshone Bannock Tribes commented with concern that Bonneville’s budget cuts in the interests of budget efficiencies are impacting day-to-day operations, limiting their opportunity to collaborate with non-tribal landowners, and making it difficult to participate in regional activities and keep their staff trained and up to speed. Idaho Department of Fish and Game commented in support of the need for cost-of-living adjustments for projects to sustain their productivity, which needs to be distributed equitably across the program. From a more general perspective, the Columbia River Inter-Tribal Fish Commission, along with the Yakama Nation, Confederated Tribes of the Umatilla Indian Reservation, and Confederated Tribes of the Warm Springs Reservation of Oregon, commented that a review and overhaul of project review and budget management processes to find efficiencies is long overdue, and that conducting such an overhaul could free up several million dollars each year for on-the-ground work.

On the other hand, the Council received significant opposition in the comments to the proposal that Bonneville report prospectively to the Council on proposed changes in project budgets of five percent or more as a trigger for Council review. Comments of this type came from the Kootenai Tribe of Idaho, Columbia River Inter-Tribal Fish Commission, Yakama Nation, Confederated Tribes of the Umatilla Indian Reservation, and Confederated Tribes of the Warm Springs Reservation of Oregon, Bonneville,

Public Power Council, Snohomish PUD, and the Western Montana G&T Cooperative. Comments included that the Council is overstepping its bounds with the proposed five percent threshold on project budget increases and decreases; the proposed threshold is in conflict with the contractual relationship between the Tribes and Bonneville in their Long-Term Agreements and Fish Accord Extensions; this could greatly increase administrative burden; the Council should not adopt this threshold and instead focus on the broad programmatic and regional commitments to meet program goals; this provision imputes a budget oversight role to the Council that is not based in the statute and that properly resides with Bonneville; budgets and contract administration are matters between Bonneville and individual project sponsors; initiation of Council review for budget changes of five percent or more would divert a substantial amount of time and effort, for both Bonneville and project sponsors, to a process that does not provide any apparent value or address anything other than a hypothetical concern; the Council should carefully consider the tradeoffs between benefits and administrative burden in thresholds for monitoring specific projects; and the threshold would be in direct conflict with cost management efforts and should be removed from the addendum. The Council did not receive comments specifically in support of this trigger mechanism.

In response to these comments, the Council reworked these provisions for the final Part II. Based on the original recommendations and comments, the Council continued to emphasize the basic point that budget management efforts should not compromise the productive work of the program. The Council intends to monitor program and project implementation and especially changes in implementation to this end, as part of helping the agencies and tribes and others maintain the substantive benefits resulting from implementation of the Council's program; preserving the value of science and project review while fine-tuning that review to be as valuable and efficient as possible; and understanding and reporting on program performance. The Council did delete the budget trigger. It was a distraction that obscured the point that the Council is indeed not interested in managing the budget – that is Bonneville's role – but is interested in reviewing and protecting the substantive work of the program.

Cost Savings

A final and related topic in this section involved support for and concerns about what is known as the “cost-savings” effort. In stating a list of emerging priorities in the 2014 Program, the Council's explicit expectations 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 kinds 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 toward 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.

In comments on the draft Part II, the Spokane Tribe of Indians called for stronger language and further refinement of the cost savings process in the addendum, including a commitment that the Council and Bonneville work together to identify cost savings and that 100 percent of the savings be reinvested in the program. The Tribe suggested program language to more closely tie the cost savings process to the emerging priorities and include a coordinated process with state and federal fish and wildlife agencies and tribes as part of an improved public process. The Public Power Council, Snohomish PUD, and Western Montana G&T Cooperative supported the effort to identify program cost savings, but emphasized that any cost savings should be returned to Bonneville and the ratepayers.

The Council committed in Part II to working with Bonneville 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. 2020 Addendum, Part II, at 12. In a program with priorities still to be implemented, a commitment to return all savings to Bonneville would seem to be counter-productive and an obvious disincentive to fish and wildlife managers, program participants and project sponsors to help in the effort to find program and project efficiencies and savings.

Implementation Procedures

Program Coordination

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. The Council did not identify a particular need to include a provision on coordination in Part II.

In response to the particular comment from the Spokane Tribe of Indians, 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 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 basinwide 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. In coordinated comments on the draft Part II, the Columbia River Inter-Tribal Fish Commission and the Yakama Nation, Confederated Tribes of the Umatilla Indian Reservation, and Confederated Tribes of the Warm Springs Reservation of Oregon, reiterated their earlier comments that the Council's project review process has grown dramatically over the last two decades and diverts resources that could be dedicated to on-the-ground activities, and thus a review and overhaul of project review and budget management processes to find efficiencies is long overdue, and that conducting such an overhaul would free up several million dollars each year for on-the-ground work.

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 recommended 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 (to be finalized later in 2020). The Council does not necessarily agree with some of the criticisms in the comments – the Council believes it has tailored and transformed the project review process over time to match the needs of the program, including periodic and efficient reviews and recommendations consistent with long-term implementation commitments. Even so, the Council is continually open to exploring all of the ideas described in these recommendations as long as 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 recognized in Part II of the Addendum that the next few years will see the completion of or significant progress on a number of ongoing efforts, including the Columbia River System Operations EIS and a decision on a preferred alternative, new Biological Opinions, a need either to extend the Accords or in some other way adapt how the program is implemented, and other major developments. And in this light, the Council will begin consultation soon with the state and federal fish and wildlife agencies, tribes, and Bonneville about alternatives for future implementation of the fish and wildlife program, including any needed refinements in project review. 2020 Addendum, Part II, at 12. The Council otherwise concluded that using Part II of the program Addendum itself to script a new project review process was not a necessary or useful idea.

In comments relevant to this and the previous section, the Public Power Council 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 Snohomish PUD 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 must 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 (to be finalized later in 2020) should also provide substantially increased amounts of information and assessments to this end.

General Comments on the Draft of Part II

Many of the commenters on the draft Addendum included general comments or observations on the approach the Council took in the Addendum overall or in Part II in particular, or about the program and program implementation in general. Specific elements and points made in these comments have been addressed above, but the Council added this section to acknowledge these general comments and respond briefly where necessary.

A number of commenters acknowledged and generally supported the approach the Council took in deciding to address a small set of issues in a 2020 Addendum to the 2014 Program. For example, the Washington Department of Fish and Wildlife supported the focus of the 2020 Addendum on refining program implementation, identifying new priorities for implementation, evaluating program performance, and better incorporating the adaptive management framework into the program. Washington acknowledged that the draft Addendum was responsive to the agency's original recommendations and generally consistent with WDFW near-term priorities in a number of ways, including by placing additional emphasis on how to better understand and address the negative effects of climate change, non-native species, invasive species, and predation on ecosystem function and native species recovery; identifying appropriate near-term priorities for implementation and funding; providing program guidance on project implementation; and addressing with appropriate provisions climate change, mitigation in blocked areas, ocean, estuary, mainstem hydrosystem flow and passage operations, predator management, sturgeon, continued progress on the Council's phased reintroduction for salmon above Chief Joseph Dam, predator management of Northern Pike, pinnipeds, and avian predators, identification of white sturgeon recruitment and productivity limiting factors, and cost-effective implementation of fish and wildlife strategies in the program.

Montana Fish Wildlife and Parks similarly commented in support of the addendum, noting that its recommendations were largely reflected as well. The Idaho Department of Fish and Game and Idaho Office of Species Conservation commented that overall the Addendum approach improved the content and organization of the fish and wildlife program.

The Oregon Department of Fish and Wildlife simply noted in response to the draft Addendum that it looked forward to working closely with the Council, Bonneville, and the regional participants in the program to ensure the program protects, mitigates, and enhances Columbia Basin fish and wildlife resources affected by construction and continued operation of the hydropower system.

NOAA Fisheries commented in various ways to support the draft, noting that NOAA's recommendations and management perspectives were largely reflected in how the Council dealt with the program and developed the draft program addendum in this amendment cycle. NOAA reiterated its support for the 2014 Program, and encouraged the Council to make progress in all areas of it that are called for in NOAA's relevant recovery plans and biological opinions throughout the Columbia River Basin. The U.S. Fish and Wildlife Service noted that the Council is recommending modest adjustments and modifications to the program rather than a major revision, which reflects the maturity of the program and the need for continuity and certainty, and the Service anticipated that future program amendments would follow a similar pattern of modest adjustments rather than a major shift in direction.

The Confederated Tribes of the Colville Reservation supported the Council's incremental approach to this round of program amendments given the regional processes underway and the already extensive program, noting that preparing an addendum that complements and supplements the program is appropriately pragmatic and cognizant of these other processes and the new scientific information, analysis, and public participation involved. The Spokane Tribe of Indians generally supported the draft Addendum, applauding the Council for recognizing the inadequate mitigation and funding devoted for the impacts caused by the construction and continued operation of Grand Coulee and Chief Joseph dams, and noting that if the Council intended to alter Part II significantly the Spokane Tribe expected the Council to consult with the Tribe prior to finalization.

The Upper Columbia Salmon Recovery Board commented that it appreciated that the draft 2020 Addendum highlights critical ongoing and emerging science and policy issues that will require new or increased, and then sustained, collaboration and resources to achieve mitigation and recovery objectives for Upper Columbia populations. Examples of such management issues include the continued threat of Northern Pike, ongoing avian and pinniped predation, and climate change – topics that can potentially impact the success of restoration and recovery efforts in the upper Columbia.

And the Chinook Indian Nation commented to appreciate the stated purpose of the Addendum and also appreciate the program accomplishments, noting a desire to assist toward further accomplishments in ways suited to their locale, expertise, and resources of time and personnel.

The Council appreciates these comments, and the time and effort these entities – and all the others involved – gave and are giving to this amendment process and to program implementation in general.

The Columbia River-Inter Tribal Fish Commission and the member tribes of the Commission - Nez Perce Tribe, Yakama Nation, Confederated Tribes of the Umatilla Indian Reservation, and Confederated Tribes of the Warm Springs Reservation of Oregon – commented with a set of concerns related to the fact that the draft of Part II identified a set of near-term priorities for implementation and funding that focused on blocked area populations and issues downstream of Bonneville Dam. A number of the specific concerns have been summarized and addressed in other sections of this document, but it seems important to gather them here: These Tribes and their Commission commented that draft Part II failed to reaffirm measures and issues affecting populations that directly impact the CRITFC member tribes. While the Addendum may not explicitly discount measures in the Snake Basin and mainstem Columbia, the reality of capped/flatlined budgets means funding “new” or “emerging” priorities requires shifting or reducing money currently addressing ongoing priority measures. And expressing some support for BPA’s 2018-2023 Strategic Plan objective for carefully managing fish and wildlife program costs to at or below inflation ignores the fact the populations in the Columbia River cannot currently be described as healthy and harvestable, and program actions to date have yet to achieve the program’s goals. The program has assisted in implementing necessary and important habitat restoration work, monitoring and evaluation, and hatchery actions; core work will need to continue. And the Council should acknowledge that new, different, or additional measures may be required in the future if the performance indicators adopted into the program through this Addendum process reveal that the current program is not achieving its goals. Council leadership and the program must have a sense of urgency and sufficient funding to realistically achieve program goals.

These entities further commented that against this larger backdrop, reorganization and refinement of the Council's program framework is positive; it will help demonstrate program successes and adaptively manage “measures” to achieve their desired results. But the draft of Addendum Part II appears disconnected from the promising policy level proposals of Part I – the draft of Part II drifts back into project-level budget oversight issues, renders judgment on BPA's response to long-standing versus “emerging” priorities and funding allocations across the basin, and offers suggestions that we would characterize as program planning or goal/objective development and yet none of what is presented is supposed to change the existing 2014 adopted program. And juxtaposed against draft Part I, we see inconsistencies. There are certainly issues that should be engaged by the Council (e.g. climate change, predator reduction, etc.), in the right

context, but we believe that it would be most productive for the region to continue to collaborate and complete what is offered in Part I, and with that completed, consider issues of priority, resource allocation, and program implementation in a future amendment cycle against that backdrop.

The Council appreciates the comments and perspectives. The Council did revise Part II to recognize explicitly the implementation commitments (such as the Accord Extensions, the 2018 spill agreement, and other matters) that are most important to the goals and the work of these Tribes. And the Council reiterates here a couple of points made elsewhere above: First, the existing, core productive work of the program intended to benefit salmon and steelhead and other species of importance to these Tribes is as high a priority of the program as anything can be. The Council did not focus on this part of the program precisely because strong implementation commitments exist and are expected to continue. The recommendations from others indicated a handful of implementation needs that do not have commensurate commitments, and so the Council continued to believe in the need to identify these implementation gaps in Part II. But implementation is not to occur in a way that compromises the important work here. Second, the Council acknowledged above that new, different, or additional measures may be required in the future if reporting on the current suite of protection and mitigation actions reveals that the current program is not achieving its goals. Third, the Council did not intend by the provisions in Part II to get involved in detailed budget management. The intent is to focus on productive work, and not allow productive work to be compromised by budget management activities.

Bonneville and the Public Power Council and a set the Bonneville customers (including Snohomish PUD and Western Montana Electric G&T Cooperative) provided a set of similar or coordinated comments as well. The focus was less on specific provisions in Part II as it was on a set of overarching principles and constraints. Again, a number of the specific points are summarized and responded to above, but there is a need to capture them collectively, organized into a set of related topics:

Bonneville fish and wildlife costs and additional mitigation: Comments appreciate that the draft Addendum recognized Bonneville's need to strengthen its financial health and manage costs carefully, coupled with concern that the draft Addendum appears to then ignore this need to manage costs carefully by calling for implementation of emerging priorities while inserting itself into BPA's budget-control efforts in an apparent attempt to limit those efforts. Draft Part II goes beyond its intended purposes of reorganization or supplementation, and instead would amend the program by significantly expanding the mitigation that the Council recommends. A thorough evaluation of Program accomplishments would provide critical information that needs to

be considered before calling on Bonneville to “begin a comprehensive effort” to “intensify, expand, and then sustain” significant new mitigation. Any changes or additions should be carefully crafted to account for historic accomplishments and to accommodate other regional planning processes currently underway. Ultimately, the Council should take a more disciplined approach to managing the total costs of the fish and wildlife program. Work within the context that Bonneville intends to manage its fish and wildlife program costs at or below the rate of inflation, inclusive of any new obligations. Recognition of program maturity and BPA Strategic Plan, which calls for flat overall spending and prioritization of new projects within existing budgets. Acknowledge finite budget. Where increased spending is needed, this should come from reductions in other areas that may have outlived their purpose or usefulness within the program. Continue to be concerned about fish and wildlife costs and ongoing mission creep. Council must balance costs of protection and mitigation with also ensuring an adequate, efficient, economical and reliable power supply.

Prioritization: The Council should prioritize fish and wildlife investments based on biological effectiveness. There is a need for a better prioritization framework within the program, particularly when the draft Addendum calls for funding of emerging program issues as well as “significant increases” without compromising existing mitigation efforts elsewhere in the program. A prioritization framework would, ideally, provide further insight and detail from the Council as to how these emerging issues and other increases should be handled within Bonneville’s existing fish and wildlife program. In addition to any guidance from the Council on this issue, Bonneville should and will continue to explore options for prioritization and effectiveness that can be incorporated into its fish and wildlife program, consistent with the Strategic Plan. Such options might include compliance, effectiveness, and cost-benefit metrics that may help Bonneville continue to document its ongoing compliance with the Northwest Power Act mitigation mandates while doing so in a more biologically sound and cost-effective manner. A prioritization strategy may also help inform any issues about spreading cost management efforts “equitably” across the Program. Establish a methodology to prioritize projects based on biological and economic impacts; reach agreement on the projects of highest priority before recommending them to BPA; and eliminate redundancies and create efficiencies during this process. Prioritize recommended actions based on a list of criteria:

- Links to hydropower impact
- Produces in-place, in-kind mitigation
- Improves ecological functionality, alleviates limiting factor(s)
- Produces broad biological benefits
- Provides benefits to ESA listed species/stocks
- Improves the effectiveness of other projects or efforts
- Produces easily measurable results

- Represents a unique work effort (does not duplicate another project or effort)
- Utilizes cost sharing
- Represents the least-cost alternative

Nexus to the federal hydrosystem: Ensure a nexus between mitigation and impacts of the federal hydrosystem, as recognition of the statutory mandate of the Council to support any program element is essential. The Council needs to manage the program's focus and ensure a hydro nexus, distinguishing between FCRPS impacts and other human impacts. This context underscores our continued need for careful review of the program and addendum's mitigation guidance and our concern that certain aspects of the draft addendum suggest mitigation that Bonneville lacks a clear responsibility to address. Certain categories of issues raised in Part II of the draft Addendum have an uncertain relationship to federal hydropower impacts or otherwise are broader regional issues that should not fall exclusively to the Council's program as hydrosystem mitigation responsibilities. demonstrating and articulating a specific, case-by-case connection to hydrosystem impacts and accounting for the share of responsibility that can be apportioned fairly to other factors. Council has lost sight of clear requirement that programs must have clear connection to mitigation of specific impacts from federal hydrosystem.

Objective, independent, and scientific evaluation of project effectiveness: Focus mitigation recommendations on resources where improvements can be affected. Continue ISRP science review and be responsive to it in project recommendations.

Recognition of other processes, such as the requirements of the Endangered Species Act and National Environmental Policy Act compliance: Program should incorporate by reference and ensure consistency with provisions of the most recent Biological Opinions. Incorporate by reference and not be in conflict with Accord Extensions and Bonneville/Washington MOA.

Bonneville budget, project, and contract management: The draft Addendum indicates Council has keen interest in how Bonneville implements mitigation, with the final pages of the draft addendum devoted to that topic. Bonneville has long been committed to independent science, regional collaboration, and strong partnerships to ensure we get the highest value for our fish and wildlife investments. We continue to support ongoing communication and coordination with the Council with respect to implementation of mitigation. However, in the draft Addendum the Council is getting too deep into budget and project management; that is Bonneville's role.

The Council also appreciates the time and attention and resources Bonneville and the Bonneville utility customers give not just to this amendment process but to the program in general. To summarize a set of specific responses above: The Council does understand the need at Bonneville to stabilize fish and wildlife costs over a period of time. The Council decided to focus on just a handful of issues where the substantive implementation of priority program measures is lacking. These substantive implementation gaps need to be filled without taking away from other productive ongoing substantive work to address hydrosystem impacts, whether subject to an Accord-type implementation commitment or not. Doing so in a responsible way does not mean Bonneville will not be able to stabilize the fish and wildlife mitigation package and the costs over a decent period of time; it just may not be at precisely the budget level in the current fiscal year. Also, the Council appreciates the focus on the need to ensure that the program measures and objectives that get implemented are expected to benefit the fish and wildlife species adversely affected by the development and operation of the Columbia River hydroelectric facilities. The Council is confident the measures in the program for implementation do have a sufficient nexus to those species, but the frequent reminders are important. The Council heeded the comments about recognizing other process and implementation commitments, and so added provisions explicitly recognizing the most recent Accord agreements and biological opinion implementation commitments, and will certainly assess the outcome of the NEPA process as to how it affects the program (as will other program participants). The Council also appreciates the comments in support of objective, independent, and scientific evaluation of project effectiveness, including continued reliance on independent scientific review. The Council's related focus on improving how program performance is reported and assessed is intended to elevate the focus on effectiveness to a much greater degree over time. And finally, as noted in the above responses, the Council did not and does not intend to try to interfere in day-to-day budget, project, and contract management, agreeing that is Bonneville's role.

The Sierra Club and other environmental and fishing organizations and hundreds of individuals aligned with the groups commented that the fish and wildlife program and the draft Addendum falls woefully short of what is needed to meet the requirements of the Northwest Power Act, the Endangered Species Act, and Tribal Treaty responsibilities, as salmon are in dire straits and in danger of extinction. The program's abundance and SAR objectives are generally good, but proposed actions will not come close to achieving these desirable goals. The draft Fish and Wildlife Program Addendum is a disappointment - continues a too little, too timid approach rather than develop a plan that will work to recover salmon and steelhead in the Snake and Columbia rivers. Salmon are running out of time, and the orca that need Chinook salmon from these rivers are running out of time as well; while protecting orca is not the

direct responsibility of the Council, it would be short-sighted and irresponsible not to acknowledge the important connection to salmon and steelhead. The Council should bring its substantial analytical expertise and leadership to restore the Snake River, and support salmon growth while creating clean energy solutions for communities. The Orca Network and Whale and Dolphin Conservation commented that for the benefit of salmon and steelhead and for especially for orca, mitigation and recovery efforts for salmon populations utilizing the Columbia River Basin must be accelerated to achieve abundance and healthy population number. Prioritize actions for salmon recovery that meet the 4-5 million annual fish returns goal. The matter is urgent and therefore requires largely supported, urgent plans of action, in conjunction with recommendations of the Orca Recovery Task Force. Steward the development of quick and creative solutions for wild salmon recovery and clean energy projects; ensure a healthy Bonneville, and healthy eastern Washington communities, by finding ways forward that serve salmon and all interested parties.

The Council appreciates these comments and the time and attention the groups and the many individuals gave to commenting in writing and at public hearings. Comments on specific elements are noted at appropriate places above. The Council notes in summary that the program's abundance and survival goals and objectives are largely a result of recommendations of the agencies and tribes and the work of the Council on the program over the last 30-plus years, and the comments of the environmental groups generally support the program's goals and objectives. As for actions, the program also consists largely of the measures and programs recommended by the state and federal fish and wildlife agencies and tribes. Specific operational measures the environmental groups seek at this time for greater survival (e.g., ramped-up spill operations) are also supported by these agencies and tribes and supported here in the Council's program. The same is true of program measures continued in this program to evaluate and implement methods to increase natural and artificial production of salmon and steelhead in the upper Columbia. The Council identified two other Columbia-specific measures called for in these sets of comments: One was increased salmon hatchery production in the lower Columbia as a food source for orca, an issue addressed above under the Artificial Propagation strategy. The other – and main aim of these comments - is removal of mainstem hydropower dams, especially in the lower Snake River, a topic also addressed above, in the mainstem section. The Council's lack of a commitment on that score is not a failure – it represents what the Council understands to be within the scope of the fish and wildlife program set forth in the Northwest Power Act, which calls for the Council to work with its partners to develop the best program to protect, mitigate and enhance fish and wildlife that can be derived from and consistent with the existing hydropower system. If removal of major mainstem portions of this system are necessary or advisable to avoid extinction and recover salmon, that is a consideration for state,

federal and tribal sovereigns to make within the political system. If the entities in the region do commit to changes in system components, the Council can use its considerable technical, scientific, and public-engagement capabilities to help the region make that transition in the most cost-effective way possible.

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

AEERPS Statement

Section 4(h)(5) of the Northwest Power Act requires that the Council's fish and wildlife program consist of measures that protect, mitigate and enhance fish and wildlife affected by the development, operation and management of the Columbia River hydroelectric facilities "*while assuring the Pacific Northwest an adequate, efficient, economical, and reliable power supply.*" At the conclusion of a program amendment process the Council signifies in some manner that it has considered how the collection of measures to be adopted as part of the program might affect the region's power supply; also considered in some fashion the many other factors currently affecting the adequacy, efficiency, economics and reliability of the region's power supply, and has an appropriate level of confidence that the region may implement the revised fish and wildlife program while maintaining an adequate, efficient, economical, and reliable power supply. This is known as the "AEERPS" analysis or consideration or conclusion, documented here.

The Council began analyzing the relationship of the fish and wildlife program decision to these aspects of the power supply in the first fish and wildlife program decision in 1982. In 1994, as the program grew in scope and extent, the Council produced an extensive analysis explaining its understanding as to what it means to maintain these elements of the power supply in the context of approving the fish and wildlife program. This became Appendix C to the 1994 Fish and Wildlife Program, "Assuring an Adequate, Efficient, Economical and Reliable Power Supply and the Ability to Carry Out Other Purposes of the Power Act" ([1994 FWP App C AEERPS](#)), combined in the analysis and AEERPS conclusion with Appendix B, "Summary of Hydropower Costs and Impacts of the Mainstem Passage Actions" ([1994 FWP App B Hydro](#)). The Council has understood and applied the statutory AEERPS provision in a consistent way both before and after the 1994 explanation. See, e.g., Appendix A to the 2003 Mainstem Amendments, "Analysis of the Adequacy, Efficiency, Economy, and Reliability of the Power System" ([2003 FWP Mainstem App A AEERPS](#)); Appendix R to the 2014 Fish and Wildlife Program, "Assuring the Pacific Northwest an adequate, efficient, economical and reliable power supply" ([2014 FWP App R AEERPS](#)). These documents remain source documents for understanding the Council's approach. The Council staff briefed the Council on the AEERPS considerations near the beginning of the Council's consideration of the recommendations in this amendment process, another consistent source of the Council's understanding of this provision of the Act. ([Council AEERPS briefing Feb 2019](#))

As will be particularly illustrated below, any AEERPS considerations and conclusions during a fish and wildlife program amendment process are tentative or preliminary, necessarily so. Following the program amendment process, the Council begins the separate statutory process to review and revise the Council's regional conservation and electric power plan, of which the fish and wildlife program is but a part. The adequacy, reliability, efficiency and economics of the region's power supply can be fully gauged only in the context of a comprehensive review of the power system during the power planning process, especially as (a) fish and wildlife measures are but one of many factors and developments affecting the region's power supply and (b) the power plan's strategy for what cost-effective resources to add to the region's power supply is the vehicle intended under the Act for addressing the effects of the fish and wildlife program and other developments on the power system and maintaining an adequate, reliable and economical power supply. Any AEERPS considerations in the fish and wildlife program decision have to assume that the Council will adhere to the Power Act requirements in developing the power plan, including approving a conservation and generating resource strategy to guide Bonneville and the region in acquiring cost effective resources as necessary to meet or reduce demand for electricity and to "assist [Bonneville] in meeting the requirements of section 4(h) of this Act," that is, to implement the Council's fish and wildlife program.

With that background, the Council analyzed the adequacy, efficiency, economics and reliability of the region's power supply and made certain conclusions and assurances in the context of deciding on the 2014 Fish and Wildlife Program. 2014 Fish and Wildlife Program, at 18-19 and in Appendix R at 204-18 ([2014 FWP AEERPS](#) ; [2014 FWP App R AEERPS](#)). The 2014 Program's AEERPS analysis and conclusions are incorporated and apply here as well. This is because in this program amendment cycle the Council is adding but a modest addendum to the existing 2014 Fish and Wildlife Program. And most of that addendum (Part I, to be approved later in 2020) will focus on improvements in assessing and reporting on program performance, without altering program measures or implementation. Part II of the Addendum approved in January 2020 did identify a small handful of program implementation needs at the edges of a very large program implementation effort. Any resulting changes in operations (refinements at Libby and Hungry Horse dams) or project implementation, and resulting effects on both the generation of the system and the costs of the fish and wildlife program will be well within the range of what has been the norm in recent years and what was analyzed in 2014.

And yet the modest changes in implementation associated with this particular fish and wildlife program amendment process have to be understood in the context of ongoing major disruption that is occurring in the region's power system. Both Bonneville and a coalition of environmental groups commented during the original program recommendations that more is at stake in the AEERPS consideration than just the incremental costs associated with new program amendments, although with different perspectives on what is needed. The Council does not disagree in general, although the incremental perspective is important, too, in a 40-year-old program. But the broader story of power system change is also important and becoming familiar, to note just a few of the more important developments: The Council's latest resource adequacy assessment indicates that the region has a significant resource adequacy issue beginning as early as 2021 and escalating dramatically after that, primarily due to the likely retirement of nearly 4,000 megawatts of coal-fired generating capacity. The role of natural gas-fired generation in the region's and the West's power supply grew dramatically over the last two decades, and yet that resource base will also have to decline just as dramatically in the next two decades to realize the 100 percent clean energy goals in recent Washington and California legislation. State clean energy laws and policies have instead forced tens of thousands of megawatts of renewable energy generation onto the system in the Northwest and West, a transition that will only escalate further under the most recent and proposed state legislation, a transition that brings significant capital and system integration costs to the system. This will force carbon not just out of the power system but also out of the transportation and building sectors of the region's economy at the same time by electrifying those uses. This is another aspect of the clean energy goals, and simply increases the planned disruption of the power system logarithmically. Meanwhile, a power system low on capacity and getting lower is at the same time currently awash in such abundant amounts of excess energy at times so as to depress power market prices on a sustained basis, although not without significant volatility. And while the cost of the region's power supply may still be affordable in terms of the region's overall economy, the financial health of Bonneville and the ability of Bonneville to continue to market its power and cover its important power, debt, and public purpose costs (including fish and wildlife protection and mitigation and energy efficiency) is at issue, given the nature of increasing resource choices and market opportunities and limits, including resource alternatives that do not face the same cost pressures. Meanwhile, the federal operating agencies are studying proposals not only to further increase spill to benefit juvenile salmon and thus further reduce hydroelectric generation and system revenues but also possibly to remove over a thousand megawatts of mainstem hydroelectric projects.

The list could continue. Each of these dramatic changes has its own logic, and the point is not that these changes and disruptions are bad or collectively impossible to

achieve or that the region is not up to the challenge and cannot make the transition. The Council's assumption is that we can make the transition, and the question will be more about what the cost and pace and risk will be and how likely it is that the region can stabilize the transition at some point. Nor is a point being made here that the fish and wildlife program measures and costs are unimportant in comparison – all inputs into costs and resource constraints are important to consider in the analysis. The only point being made here is that the Council cannot analyze the power system's current level of adequacy and reliability and economics on either an actual or a planning basis without consideration of the broader context, and that broader analysis could not occur in the context of just the current decision on the fish and wildlife program and its modest amendment by Addendum in 2020. The Council will use the 2021 Power Plan process to analyze and make useful conclusions about the adequacy, reliability and economics of the region's power supply given all these factors, and in the power plan recommend cost-effective steps to take to address these power system resource, supply, and cost issues.