



APPENDIX E

COLUMBIA RIVER BASIN

FISH AND WILDLIFE PROGRAM

NORTHWEST POWER PLANNING COUNCIL

COUNCIL DOCUMENT 2001-12

APPENDIX E
to the Northwest Power Planning Council's
2000 Columbia River Basin Fish and Wildlife Program

Findings on the Year 2000 Recommendations for Amendments to the
Columbia River Basin Fish and Wildlife Program

On January 12, 2000, the Northwest Power Planning Council requested that fish and wildlife agencies, Indian tribes and others submit recommendations for amendments to the Council's *Columbia River Basin Fish and Wildlife Program*. The Council received nearly 3000 pages of recommendations and supporting information from 55 entities.

In August 2000, the Council released for public review and comment a draft revised Fish and Wildlife Program. After reviewing the recommendations and the comments, the Council revised the draft and adopted substantive amendments to the program in November 2000. In this section of the program, the Council provides written findings explaining its disposition of the amendment recommendations. When the Council rejected a recommendation, or any part, these findings explain how the rejection comports with Section 4(h)(7) of the Northwest Power Act. References to the *2000 Columbia River Basin Fish and Wildlife Program* are to what is called the "Pre-Publication Copy," Council Document No. 2000-19 (November 30, 2000), except for references to the Appendices, which were organized as referenced here following the release of the pre-publication copy of the revised program. There are also a few typographical or editorial errors in the pre-publication copy of the program which are noted at appropriate places.

These amendments begin, but do not conclude, what will eventually be a comprehensive revision of the Fish and Wildlife Program. In its January 2000 notice calling for amendment recommendations, the Council explained that the purpose of this first phase of the amendment process was to restructure the fish and wildlife program around a comprehensive framework to include a vision (or long-term goal), biological objectives, strategies and implementation standards, an explicit scientific foundation and geographical organization for implementing the program, and other programmatic or basin-wide elements. In later phases of the amendment process the Council intends to call for recommendations for more specific objectives at the basin and ecological province level and, especially, for specific objectives and measures to be adopted into the program in integrated subbasin plans or in a separate mainstem plan, consistent with the program framework elements adopted in this first phase. For a description of the next steps in the fish and wildlife program amendment process, *see* Section VIII of the 2000 Fish and Wildlife Program.

Many of the recommendations for this first phase of the program amendment process contained recommendations for specific objectives, standards, strategies and measures more appropriate to later phases of the amendment process. As noted below, the Council did not adopt or reject these recommendations at this time, deferring consideration of them until the appropriate amendment phase, when they may be resubmitted in the same or modified form.

To be able to consider a very large volume of recommendations and prepare findings, the Council summarized the recommendations and organized the summaries around the proposed program framework. So far as is possible, the summaries use the language submitted by the recommending entities, but by necessity some editing and paraphrasing occurred. On occasion it has been necessary for the Council to add a note of explanation to the summary of a recommendation to clarify how it has been

summarized. The recommendations themselves are available in the Council's offices and on the Council's website at www.nwcouncil.org/library/2000/2000-19/.

In many instances a recommendation applied to more than one program area. Each recommendation has been summarized and addressed under in just one section of these findings, even if an overlap existed, to avoid duplication and cross-referencing.

Two developments after the Council's call for recommendations help explain the nature and content of the recommendations. First, for further guidance to recommending parties, the Council released, on February 24, 2000, a staff-produced "Strawman" providing an example of a fish and wildlife program organized around this framework concept, and an April 11, 2000, letter and form containing additional details on the framework structure and the phased amendment process. Many of the recommendations responded directly to these documents, especially the Strawman, as will be evident below.

Second, the staff and some of the agency and tribal representatives of the Columbia Basin Fish and Wildlife Authority (the association of the basin's state and federal fish and wildlife agencies and tribes) circulated a draft set of recommendations in the hope of achieving a consensus agency and tribal recommendation. The attempt at consensus was not successful, but one result was that many of the agencies and tribes prepared their own recommendations on the basis of the CBFWA draft. As will be seen below, this resulted in recommendations from a number of agencies and tribes that were quite similar. These recommendations were grouped, considered together and responded to collectively. Treating them all separately would be repetitive, possibly misleading, and make these findings even much longer than they already are. On the other hand, grouping the recommendations together made it hard to display what differences there were between the recommendations. Explanatory notes in the recommendation summaries attempt to highlight the main differences among similar recommendations.

In the section of the program following these findings, the Council summarized and responded to the comments received by the Council on the draft program. The findings and response to comments, together with the original January 12, 2000, notice calling for recommendations, the February framework "Strawman," and the April 11, 2000 letter and form, satisfy the federal Administrative Procedure Act's requirement of a statement of the basis and purpose for the amendments.

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1. Introduction -- description of framework concept, structure and elements/outline of program organized as a framework/explanation of how revised program will work

Source: National Marine Fisheries Service
Recommendation No. 54

Recommendation: The Service agreed with the structure and fundamental elements of the proposed program framework, as well as the proposed geographic organization -- basin, province and subbasin -- for implementing the framework.

Finding: With minor exceptions the recommending entities supported the proposal to reorganize the program around the framework concept and elements suggested by the Council prior to the program amendment process. The final amendments reflect this reorganization.

Source: Oregon Department of Fish and Wildlife
Recommendation No. 26

Recommendation: Oregon recommended an edited but substantively similar version of the introduction in the staff-prepared Strawman, which described the structure and elements of the proposed program framework. The part of the recommendation that differed most from the Strawman was the section titled "Summary of how a revised Fish and Wildlife Program should work." That part of the recommendation is further summarized here:

- *Policy and scientific framework.* In the year 2000, the Council should adopt a policy and scientific framework for its program composed of a vision, objectives, strategies and implementation standards and scientific principles for the basin and program as a whole and for subdivisions of the basin called ecological provinces.
- *Subbasin assessments and plans.* The Council should call on the region to develop and implement subbasin assessments and plans that will ultimately be adopted by the Council as part of the program. Subbasin assessments should identify the biological potential of each subbasin and the opportunities for mitigation and restoration. Based on these assessments, subbasin plans should be developed consisting of goals, objectives, strategies, and proposed actions. The subbasin plans should be consistent with the vision, biological objectives, strategies, implementation standards, and scientific principles in the program framework. Subbasin plans should guide development and implementation of fish and wildlife projects necessary to implement the program.
- *Annual project reviews.* Under the Northwest Power Act, the Council has the responsibility for conducting an annual review of projects proposed for funding by the Bonneville Power Administration to implement the Council's program. While subbasin plans are being developed, the Council should work with the fish and wildlife managers and the Independent Scientific Review Panel to complete annual project reviews in a manner consistent with subbasin planning. At a minimum, projects should be consistent with the vision, biological objectives, strategies, implementation standards, and scientific principles in the program framework.
- *Monitoring and evaluation.* The Council should emphasize the need and priority for monitoring and evaluating the benefits gained by actions taken under the program. The evaluation process should feed information back into the program planning and project review process, with adaptive management mechanisms for revising program objectives and actions on the basis of the success or failure of actions implementing the program.

- *Existing measures in the program.* Unless expressly modified by this policy and scientific framework, existing measures in the program should continue to be in effect.

Finding: The introduction to the Strawman, and to Oregon’s recommendations, proposed the reorganization of the fish and wildlife program around a framework concept of visions, objectives and strategies, to be developed and implemented across different geographic scales, from the basin as a whole, to subdivisions of the basin labeled ecological provinces, to subbasins. The introduction to the revised program as adopted in the Phase 1 amendments differed in wording from the Strawman and from Oregon’s recommendation, but not in meaning or content, with one exception: Oregon’s recommendation and the Strawman both anticipated that the Council would adopt, in the Phase 1 amendments, specific biological objectives and other framework elements for the ecological provinces. The Council did not do that, largely because the set of recommendations that the Council received did not include specific content for the framework elements at the ecological province level, even as most entities supported the concept. Instead, the Council adopted the province-level structure and organization, but otherwise decided to continue discussions with regional parties over the appropriate methods and timing for developing province-level objectives and adopting them into the program. *See* Sections III.C.3, IV.B, IX.3.

Source: Columbia River Inter-Tribal Fish Commission
Recommendation No. 40

Recommendation: The Commission also recommended an edited but substantively similar version of the Introduction in the Strawman, adding in particular that the Council needs to be mindful of its statutory duties to the Indian tribes of the Columbia Basin. In treaties and executive orders, the United States agreed to protect the rights of the tribes to take certain fish and wildlife resources. The Northwest Power Act specifically references these agreements and the Council should fully comply with the Act’s standards in this regard.

The Commission also urged the Council to lead the region by emphasizing action over process in the next program. Subbasin planning and scientific reviews are important, but the new program needs to be action-oriented and founded upon achievement of quantitative biological objectives, which will meet tribes’ treaty rights.

The Commission recommended that all on going tribal/Commission projects under the current program should remain in effect and are fully supported by tribes for continuation.

The Commission also recommended a marked-up version of the Introduction to the 1994-95 Fish and Wildlife Program. One particular recommended addition illustrates the content of these edits, and is summarized here: The 2000 Fish and Wildlife Program should build upon the lessons learned over the past seven years of emphasis on implementation of Endangered Species Act measures. First, implementation of the current biological opinions has not arrested the decline of listed salmon. The decline of wild spring/summer chinook appears to be accelerating. Second, most existing biological opinions lack performance measures based upon the biological requirements of fish and wildlife. For example, biological opinions governing land and water management actions are not adequately linked to salmon abundance. To the extent that performance measures do exist, they are inadequately enforced. In some cases, performance measures are openly flouted, e.g., applicability of state water quality standards to Corps of Engineers dams. In other cases, performance standards are too vaguely crafted to be enforced or, if specific, lack timelines for achievement and are thereby rendered impotent. Finally, some

performance standards may be so loosely linked to the biological needs of salmon that their achievement is meaningless.

Thus the 2000 Fish and Wildlife Program should adopt performance standards that are based on the biological needs of salmon. Activities proposed should be linked to fish and wildlife abundance. It is contrary to the best available science for harvest to be the only activity regulated on the basis of resource abundance. Salmon program measures need to be selected on the basis that they will adequately contribute to the smolt-to-adult returns needed to recover listed species, rebuild the runs, and comply with treaty and trust obligations to Indian tribes. Implementation of the program, as a whole, should be designed to result in creating the normative conditions necessary to stem the declines and eventually rebuild Columbia basin fish and wildlife populations consistent with the Regional Act and other applicable laws. The success of the program will depend upon the active support and participation of federal, state, and tribal governments along with their commitment to expeditious implementation. There is no time left to lose.

Finding: The introduction to the revised program differed in wording from the Strawman and from the Commission's recommendation, but not in meaning or content, reorganizing the fish and wildlife program around a framework concept of visions, objectives and strategies, to be developed and implemented across the different geographic scales of the basin. Because the Council decided to jettison and not simply amend the Introduction to the previous program, the Council did not make use of the edits provided by the Commission. Substantive provisions of the revised program, including the vision, the biological objectives, the habitat-based program and habitat strategies and the implementation provisions, are consistent with the concepts recommended by CRITFC for the introduction.

The Council expressly addressed the rights and roles of the tribes in Section VII.1 of the revised program. Substantive provisions throughout the program, such as the reference to providing abundant opportunities for tribal harvest in the statement of the Vision in Section III.A.1, also recognize the relationship of the program to the activities of the tribes, the Council's Power Act responsibilities to the tribes, and the federal government's trust and treaty obligations to the tribes.

The Transition Provisions, *see* Section IX, preserve the measures in the program that are the basis for on-going projects as the Council works to complete the subbasin plans and the revision of the program.

Source: Yakama Nation
Recommendation No. 24

Recommendation: The Yakama Nation recommended that the Council simplify and clarify the fish and wildlife program. The new program should clearly state that it is primarily a watershed restoration effort. A watershed has clearly identifiable components (ocean, estuary, mainstem, tributaries, etc.) that can be isolated and put into an understandable and proper planning context. Similarly, the components and their attendant problems can be hierarchically organized by decreasing size by beginning at a regional or basin-wide scale, then to a landscape scale, then to a stream corridor scale, a stream scale, and finally even down to the stream reach scale. The goal should be to produce an understandable document that clearly outlines the problem, how the problems are being addressed within the component parts of the watershed, prioritizes and allocates resources in a responsible fashion, and emphasizes scientifically defensible ecological restoration practices.

The Yakama Nation noted that it had previously indicated an increasing intolerance with excessive planning and research camouflaged under the banner of a need for “good science,” as opposed to actual on the ground projects that will put fish in the river. However, the process is so close to achieving a level of planning that truly represents an ecological systems approach that will silence further criticism, that it was willing to support any additional effort that will bring it to a successful conclusion.

Timing is crucial to be able to access additional Bonneville funds -- the Council should not deviate from planned completion schedule. If the Phase 1 amended program can be developed on schedule, i.e. by the end of August, 2000, additional Bonneville funds could be made available in the 2001 fiscal year to address immediate action items identified in the program.

Finding: The revised program is consistent with this recommendation. The program has been reorganized around a geographic and topical framework that emphasizes subbasin/watershed level planning and implementation, intended to be an integrated habitat-based program that seeks to accomplish its goals as much as possible by protecting and restoring the natural ecological functions, habitats, and biological diversity of the Columbia River Basin. The Council completed Phase 1 in the time hoped for, and is calling for and seeking funding in Fiscal Year 2001 both for high priority (or immediate action) items and for the resources needed to engage in subbasin planning and complete the program revision.

Source:	Spokane Tribe
Recommendation No.	28
Source:	Montana Fish, Wildlife and Parks
Recommendation No.	31
Source:	Colville Confederated Tribes
Recommendation No.	33
Source:	Burns-Paiute Tribe
Recommendation No.	34
Source:	Idaho Department of Fish and Game
Recommendation No.:	36
Source:	Shoshone-Bannock Tribes
Recommendation No.	38
Source:	Coeur d’Alene Tribe
Recommendation No.	42
Source:	U.S. Fish and Wildlife Service
Recommendation No.	46
Source:	Kalispel Tribe
Recommendation No.	48
Source:	Kootenai Tribe
Recommendation No.	50

Recommendation: These fish and wildlife agencies and tribes recommended that the program as a whole be based on the following principles:

- The purpose of the program is to protect, mitigate, and enhance fish and wildlife affected by the federal hydropower system.
- An important tool to achieve this purpose is to direct the Bonneville Power Administration funding.

- There are three basic sources of the Bonneville authority for funding fish and wildlife activities: the Act; the Endangered Species Act; and legislation authorizing (and mitigating for) the federal hydropower system.
- The Bonneville fish and wildlife budget has three different kinds of costs, which are treated differently but are subject to review and coordination under the program: Capital Investments (which require separate Congressional authorization); Reimbursables (which Congress adopts and Bonneville reimburses); and, Direct Expenditures (which Bonneville just pays).
- The program amendments should be based on existing laws. No legislative actions are proposed.
- The current program should be retained in the new program until amended by subbasin plans.
- The amended program should delineate the decisions required, the process and criteria by which the decisions should be made, and the roles of those affected by the decisions.
- The program should have a clear description of a straightforward process by which the region makes decisions regarding Bonneville fish and wildlife funding. This process should be based on existing legal authorities and should provide the basis for and spell out the roles of the involved parties.
- The program should present the standards or criteria by which these decisions are made. This will allow all participants in the program to know how their efforts will be judged and allow the public to hold decision-makers accountable.
- The program should retain the current measures that serve as the basis for ongoing implementation.

Idaho's recommendation did not include what is summarized in the last three bullets. The Fish and Wildlife Service's recommendation included only what is in the last three bullets as well as a recommendation that in order to protect, mitigate and enhance fish and wildlife affected by the hydrosystem, the program should have an overall goal and a set of regional objectives, strategies and implementation standards and scientific principles.

Finding: Although not worded exactly as here, the revised program is consistent with these recommendations -- directing the planning and implementation processes necessary to secure Bonneville funding for the program, consistent with the protection and mitigation obligation in the Power Act; an overall goal and set of objectives, strategies and standards and provision for developing the substantive content of these framework elements in future steps; a description of the standards and procedures for further planning and implementation; preservation of existing measures in the program until replaced by specific objectives and measures in adopted mainstem and subbasin plans; and provisions for integrating the program with Endangered Species Act and other fish and wildlife responsibilities.

Source:	Spokane Tribe
Recommendation No.	28
Source:	Coeur d'Alene Tribe
Recommendation No.	42
Source:	Kalispel Tribe
Recommendation No.	48
Source:	Kootenai Tribe
Recommendation No.	50

Recommendation: These four tribes generally supported for adoption into the program the Introduction in the Strawman describing the proposed framework concept, structure and elements, as well as similar language in the Council's "Form for Recommendations" published April 11, 2000.

The program should recognize that the Bonneville Power Administration has constitutionally mandated trust responsibilities to all Columbia Basin tribes. The new fish and wildlife program must recognize and uphold these trust responsibilities. The Council recommends how Bonneville is to spend federal fish and wildlife mitigation funds, and therefore these recommendations must be consistent with Bonneville's trust responsibilities to the tribes. The Council should help realize part of this trust responsibility by paying deference to tribal programs and projects that are consistent with the policies and guidelines of the program.

Each tribe used quite different wording to reflect the following concept, but without apparent difference in meaning: The program should also include language providing that all measures in the existing 1994-95 Fish and Wildlife Program continue to be funded for implementation until explicitly modified or replaced through a subbasin planning process in which all the fish and wildlife managers have participated, including the Spokane, Coeur d'Alene, Kootenai and Kalispel Tribes as sovereign tribal governments.

Finding: The introduction to the revised program differs in wording from the Strawman and thus from these tribes' recommendation, but not in meaning or content, reorganizing the fish and wildlife program around a framework concept of visions, objectives and strategies, to be developed and implemented across the different geographic scales of the basin.

The Council expressly addressed the rights and roles of the tribes consistent with the recommendation in Section VII.1 of the revised program, including recognition of the federal government's trust obligation toward the tribes affected by activities covered in this program.

The Transition Provisions, *see* Section IX, preserve the measures in the program that are the basis for on-going projects as the Council works to complete the subbasin plans and the revision of the program.

Source: Shoshone-Bannock Tribes
Recommendation No. 38

Recommendation: Of primary importance to the Shoshone-Bannock Tribes was the fact that the program has to carry the federal government's obligations to the tribes and those treaties, executive orders, and agreements that the tribes of the Columbia River Basin solemnly entered into with the United States. Federal consultation is a component of fulfilling this requirement, and it is called for in the Power Act and is necessary because the Council's fish and wildlife program is the product of federal law.

Finding: The Council expressly addressed the rights and roles of the tribes consistent with this recommendation in Section VII.1 of the revised program, including recognition of the federal government's trust obligation toward the tribes affected by activities covered in this program. The revised program recognizes that completing and implementing the program and subbasin plans will require interaction, cooperation and consultation with the tribes. The Council commits to working with the tribes in a relationship that recognizes the tribes' interests in co-management of affected fish and wildlife resources and respects the sovereignty of tribal governments.

Source: Umatilla Tribes
Recommendation No.: 41

Recommendation: The Umatilla Tribes recommended retention of the current program measures in the new program until replaced by subbasin plans.

Finding: The Transition Provisions, *see* Section IX, preserve the measures in the program that are the basis for on-going projects as the Council works to complete the subbasin plans and the revision of the program.

Source: Kootenai Tribe
Recommendation No. 50

Recommendation: The Kootenai Tribe recommended that the revised program state that restoration of the fish and wildlife resources in the basin will take a tremendous commitment from Bonneville Power Administration and the Council to approve and fund necessary actions. The resources of the entire basin, from fish and wildlife to berries and sacred sites, are important to the life and the culture of the tribe. The Council needs to be committed to work with the Kootenai Tribe to further develop and refine the recommendations by the tribe through further comments, consultations, and hearings.

Finding: The Council expressly addressed the rights and roles of the tribes consistent with this recommendation in Section VII.1 of the revised program, including recognition of the federal government's trust obligation toward the tribes affected by activities covered in this program. The revised program recognizes that completing and implementing the program and subbasin plans will require interaction, cooperation and consultation with the tribes. The Council commits to working with the tribes in a relationship that recognizes the tribes' interests in co-management of affected fish and wildlife resources and respects the sovereignty of tribal governments.

The Council recognizes that Bonneville may need to increase its already substantial contribution to the needs of fish and wildlife affected by the development and operation of the hydrosystem. The revised program states its support for Bonneville's pledge to "meet all of its fish and wildlife obligations," as stated in the administration's Fish and Wildlife Funding Principles of September 1998. *See* Section VI.4 of the revised program.

Source: Coeur d'Alene Tribe
Recommendation No. 42

Recommendation: The Coeur d'Alene Tribe objected to the Council adopting its amended program without first reconciling the amendment process with the federal process for modifying the NMFS and USFWS ESA Biological Opinions. The tribe also objected to implementation of a revised program before the program has been completely revised in a manner consistent with the recommendations of the agencies and tribes of the basin. The Council has inhibited meaningful deliberation and precluded all options for restructuring the program in any manner other than the manner predetermined by the Council (comprehensive subbasin plans were the only option considered). All measures incorporated in the Council's existing fish and wildlife program must continue to be funded for

implementation until explicitly modified or replaced through a subbasin planning process in which the Coeur d'Alene Tribe has participated as a sovereign tribal government.

Finding: The recommendations of other agencies and tribes and of other entities, as well as the comments received on the draft program, indicate wide acceptance of the framework restructuring of the program and of the importance of subbasin plans as the key focus for specific planning and implementation.

With regard to the Endangered Species Act concern, the Council believes it has addressed this issue appropriately in the revised program, consistent with this recommendation. With regard to off-site mitigation (that is, habitat and production activities to enhance fish and wildlife in the tributaries away from the areas directly affected by the hydrosystem), the Council has taken steps, consistent with the recommendations and comments of the National Marine Fisheries Service and others, to coordinate and even integrate the Endangered Species Act planning and implementation into the overall program activities of subbasin planning and project review. This will assist the region in meeting its ESA obligations while also addressing the broader mitigation obligation under the Power Act. With regard to hydrosystem operations undertaken to protect species listed under the Endangered Species Act, but which also affect non-listed resident fish that are important to this program, the revised program calls for the fish and wildlife managers and operating agencies to be aware of the needs of other species and to explain how these needs can best be balanced or accommodated. Operating conditions to meet the needs of these other species are, on an interim basis, those adopted by the Council in Section 10 of its 1995 program, recommended then by the Coeur d'Alene Tribe and the other tribes in the upper Columbia. In instances where flow management needs conflict, the program calls for system operators to identify the potential conflict and seek recommendations from the Council, fish and wildlife agencies and tribes and other affected entities on how best to balance the different needs. And the Council calls for the hydro operations forum established by the federal agencies to oversee ESA-based operations be jointly sponsored with the Council, in part to ensure the proper balance and protection of all fish and wildlife species protected by the hydrosystem, as required by the Power Act. Finally, whether different or more specific operating conditions and procedures are needed to balance the needs of ESA species with other species will be one of the major topics in the mainstem planning phase of the program revision process, to occur in 2001.

The Transition Provisions, *see* Section VIII, preserve the measures in the program that are the basis for on-going projects as the Council works to complete the subbasin plans and the revision of the program.

Source: Bonneville Power Administration
Recommendation No. 37

Recommendation: The introduction to the Strawman emphasized that one key to the revised program would be that project funding recommendations would depend on the consistency of the project with the goals and objectives of the revised program and the relevant subbasin plan. Bonneville recommended that the standard be even stronger: To be recommended for funding, a non-research project should be required to show how it will aid in the fulfillment of the goals and objectives of the program in a measurable way, with a plan for reporting results through monitoring and evaluation. A project needs to be more than “not inconsistent”; it needs to actively support the program’s goals and objectives.

Finding: The revised program is consistent with this recommendation. It calls for subbasin plans to contain goals and objectives that are consistent with the program’s overall goals and objectives,

as well a set of actions to achieve the objectives. Project proposals for funding under the program must be based on the subbasin plans and explain how the project should contribute to meeting the goals and objectives of the subbasin plan and the program. The program then also calls for project-level, subbasin plan-level and programmatic-level monitoring and evaluation to determine if in fact projects are fulfilling the objectives.

Source: PNUCC
Recommendation No. 55

Recommendation: PNUCC noted that the Council is taking an important step toward developing a more structured and logically consistent fish and wildlife program by developing the conceptual framework. The Strawman provided the basic elements for improving the Council’s decisions in the next program. This framework, when supported with a rigorous scientific foundation, should provide the region a badly needed comprehensive plan for “recovering” and “protecting, mitigating and enhancing” the fish and wildlife that inhabit the Columbia River Basin. Past programs have not provided a vision with clear biological goals to successfully guide decisions about funding proposed measures. And, as past programs have shown, a planning process lacking clarity and structure results in decisions primarily based on politics rather than clearly articulated biological and economic goals. PNUCC was supportive of the new more structured approach and hopeful that the effort would accelerate the region’s efforts to recover listed salmon and steelhead populations.

Finding: The revised program adopted the framework as proposed in the Strawman and approved in this recommendation. The Council believes the overall vision, the objectives and the strategies and implementation provisions stated in the revised program are an appropriate starting point for guiding decisions and evaluating actions in the manner recommended here, if properly completed with more specific goals and objectives in later phases of the program amendment process.

Source: Idaho Water Users
Recommendation No. 18

Recommendation: The Idaho Water Users recommended that the program introduction explain that general statements of vision, ecosystem characteristics, strategies, and principles set forth at the basin level will be adapted to each ecological province as appropriate. For example, although flow augmentation may be appropriate in select provinces, it will not be appropriate in all provinces.

The concept and foundation underlying the proposed framework for the fish and wildlife program are not well developed in the request for recommendations or the Strawman. Much more detail on these two parts must be provided so that people in the Pacific Northwest can adequately review and comment on the concepts and foundation of the program amendments. The Council should distribute as soon as possible a preliminary draft of the framework concept and foundation so that comments can be reflected in the draft amendments.

Finding: The draft revised program, and the public hearings and consultations following the issuance of the draft, provided a regional opportunity to review and comment on the framework structure and elements. The comments were largely supportive of the approach; specific issues are addressed at the appropriate places throughout these findings.

The program recognizes that the differences among the provinces will allow for different objectives and strategies that are appropriate to the conditions of the provinces. This is the purpose for more specific planning and implementation at the finer geographical scales based on a general set of standards.

Source: Columbia River Alliance
Recommendation No. 39

Recommendation: The Columbia River Alliance recommended that the Council abandon regional government supervision of habitat restoration. Repeated costly failures demonstrate that state and local entities will produce more effective efforts, particularly if improved harvest management rewards localities that invest in habitat restoration by allowing salmon and steelhead to return to the improved habitat. Limit the regional governmental role to that of providing a clearinghouse for information about successful habitat restoration strategies.

Finding: The Council agrees that the primary responsibility for planning and implementation under the program should be at the subbasin and watershed level, not at the regional or basinwide level, and provided for this in the revised program through subbasin planning that includes significant reliance on local and state entities. And the program recognizes the need for improvements in coordinating production and harvest management to allow localities that invest in habitat restoration to realize the benefits of that investment.

On the other hand, the Council is called upon to develop a systemwide, regional fish and wildlife program to protect, mitigate and enhance fish and wildlife across the basin affected by the hydrosystem and to guide Bonneville's investment of ratepayer revenues in that effort. Moreover, many of the important fish and wildlife species affected by the hydrosystem and thus important to the program have a life-cycle that transcends any particular locale, subbasin and state. And many of the hydrosystem operations and other activities that affect fish and wildlife habitat are similarly broad in geographic scope (e.g., water management is a systemwide action). As indicated in the large majority of recommendations and comments, and not just those from the fish and wildlife agencies and tribes, most of those interested in the program agree on the need for a regional or programmatic set of goals, objectives, standards and implementation provisions. Their purpose is to guide the allocation of regional dollars to the local activities that show the most promise in meeting the goals of the Power Act and the program, and to allow the Council and others to evaluate whether a disparate set of local planning and implementation actions add up to an overall program that is successful at mitigating the adverse impacts of the hydrosystem on the wide-ranging species and population structures in the basin. On that basis, the Council rejected this recommendation in part because it does not complement the activities and recommendations of the region's fish and wildlife agencies and tribes, Northwest Power Act §4(h)(6)(A), (7)(B), and because it would be less effective than what the Council did adopt in the protection, mitigation and enhancement of anadromous fish, resident fish and wildlife, §4(h)(7)(C).

Source: Northwest Resource Information Center, Inc.
Recommendation No. 51

Recommendation: The Northwest Resource Information Center, Inc. stated that Snake River anadromous fish were the *raison d'être* for the Council's program under the Power Act. Unfortunately, as we approach the 20th anniversary of the Act, these fish are threatened with extinction. The Council

should -- 20 years late -- give Snake River anadromous fish first priority in fulfillment of the letter and intent of the Northwest Power Act.

Finding: The Council rejected this recommendation as inconsistent with the Northwest Power Act, because it does not complement the activities and recommendations of the region's fish and wildlife agencies and tribes, Northwest Power Act §4(h)(6)(A), (7)(B); and because it would be less effective than what the Council did adopt in the protection, mitigation and enhancement of anadromous fish, resident fish and wildlife, §4(h)(7)(C). The Power Act requires the Council to develop a program to protect, mitigate and enhance Columbia River fish and wildlife affected by the development and operation of the hydrosystem, with special consideration to "anadromous fish which are of significant importance to the social and economic well-being of the Pacific Northwest and the Nation and which are dependent on suitable environmental conditions substantially obtainable from the management and operation of Federal Columbia River Power System and other power generating facilities on the Columbia River and its tributaries." The Power Act does *not* assign the first priority to Snake River anadromous fish. Anadromous fish across the basin, as well as resident fish and wildlife, have been adversely affected by the hydrosystem, and the Council has a corresponding obligation to provide mitigation opportunities across the basin for these affected fish and wildlife.

The program has in the past and will continue in the future to direct an enormous amount of attention and resources not just to anadromous fish, but to Snake River anadromous fish in particular. To assign Snake River fish first priority, however, would not be consistent with the activities and recommendations of the fish and wildlife agencies and tribes, which address fish and wildlife across the basin affected by the hydrosystem and which have *not* recommended assigning Snake River anadromous fish first priority under the program.

Source: Hiram Li -- Oregon Cooperative Fish and Wildlife Research Unit
Recommendation No. 16

Recommendation: Mr. Li expressed support for the multi-species framework concept, a regional approach to the basin's fish and wildlife problems, adaptive management, large-scale experiments, and using the framework approach to address gaps in understanding, set goals and evaluate progress.

Finding: The revised program has been reorganized around framework elements and a scientific foundation consistent with this recommendation.

2. Scientific foundation

2(a) Science principles

Source: Washington Department of Fish and Wildlife
Recommendation No. 43

Recommendation: The Washington Department of Fish and Wildlife recommended adoption of the eight scientific principles listed in the Strawman as the ecological principles for the revised program. The scientific principles are intended to provide the basic foundation for the development of the fish and wildlife program. While these principles are themselves general in scope, implementation strategies can be based upon them. The Council and others should use these scientific principles and the resulting implementation strategies to guide the development and implementation of subbasin plans.

At the same time, the procedures for implementing the Council's program must include consideration of the highly altered state of the present day ecosystems, and allow for management actions that address the inability of the "system" to maintain natural ecological integrity. Habitat condition must dictate management direction. For this reason, there is a need to describe different principles to guide the decision making for systems targeted for management as a "natural system" (Ecological Principles) and for those systems targeted for management as "altered systems" (Management Principles).

Finding: The Council edited the scientific principles presented in the Strawman based on recommendations and comments received but did not materially change their substantive content, and then adopted the principles into the revised program as part of the scientific foundation, *see* Section III.B.2. *See* the next set of recommendations below for findings regarding the recommended management principles.

Source:	Spokane Tribe
Recommendation No.	28
Source:	Montana Fish, Wildlife and Parks
Recommendation No.	31
Source:	Colville Confederated Tribes
Recommendation No.	33
Source:	Burns-Paiute Tribe
Recommendation No.	34
Source:	Idaho Department of Fish and Game
Recommendation No.	36
Source:	Shoshone-Bannock Tribes
Recommendation No.	38
Source:	Coeur d'Alene Tribe
Recommendation No.	42
Source:	U.S. Fish and Wildlife Service
Recommendation No.	46
Source:	Kalispel Tribe
Recommendation No.	48
Source:	Kootenai Tribe
Recommendation No.	50

Recommendation: These agencies and tribes generally agreed that the eight scientific principles identified in prior Council documents, including the Strawman, provide a general overarching scientific basis for the program, for developing biological objectives, and for linking the vision, objectives and strategies at the basin, province and subbasin levels.

These entities first recommended a number of different versions of an introduction or preface to the scientific principles, all generally consistent in meaning despite differences in organization, wording and length, summarized as follows:

The scientific principles are intended to provide the basic foundation for the development of the fish and wildlife program. While these principles are themselves general in scope, implementation strategies can be based upon them. The Council and others should use these scientific principles and the resulting implementation strategies to guide the development and implementation of subbasin plans.

These principles are not intended to direct decision-making efforts, but rather to provide a representation of what ecological principles shape naturally functioning systems. It should be the intent of the Council, the region's fish and wildlife managers, and the ISRP to incorporate these principles into their review procedures and implementation decisions whenever possible. However, final decisions must be based on the actual condition and management potential of the ecosystem(s) within the basin.

The procedures for implementing the Council's program must include consideration of the highly altered state of the present day ecosystems, and allow for management actions that address the inability of the "system" to maintain natural ecological integrity. Habitat condition must dictate management direction. For this reason, there is a need to describe different principles to guide the decision making for systems targeted for management as a "natural system" (Ecological Principles) and for those systems targeted for management as "altered systems" (Management Principles).

Montana recommended a concept for the preface to the scientific principles not included in any of the others, summarized as follows : Remaining wild, self-reproducing ecosystems must be preserved for study and inherent species diversity. Relatively pristine areas adjacent to identified core areas should be prioritized for recovery. Other areas have been altered for human use to such a degree that native species can not be restored. These areas can be restored for sustained biological productivity using available management tools. Management of fish and wildlife in severely altered ecosystems must be human induced because the existing conditions do not allow for natural reproduction.

Next, these agencies and tribes recommended the text of the Ecological Principles. The one-sentence principles recommended were the same as those in the Council's Strawman. The brief explanations following each principle were revised versions of the explanations in the Strawman.

Ecological Principles for Natural Systems

Principle 1: Biological abundance, productivity and diversity reflect ecosystem structure and conditions.

Progress toward goals for fish and wildlife species is achieved by allowing the ecosystem to develop in a manner consistent with the biological needs of the priority species and requires restoration or preservation of suitable habitat conditions throughout the life cycle of those species. However, in highly altered systems, the activities necessary to restore the natural system may not be feasible.

The Fish and Wildlife Service added that activities over the life-cycle should strive to approximate natural system conditions.

Principle 2: Ecosystems are dynamic, evolutionary and resilient.

Natural ecosystems are dynamic and constantly changing. The program should anticipate and accommodate change, and must recognize that disturbances are an important part of development and maintenance of habitat. Efforts to stabilize and reduce disturbance will fundamentally alter habitats to the detriment of capacity, productivity and diversity of target species. However, in highly altered systems current evolutionary processes may be leading to the long-term detriment of the species targeted for management.

Principle 3: Ecosystems are structured hierarchically.

Any particularly described ecosystem is composed of smaller scale ecosystems and is also a component of larger-scale systems. At any point, the ecosystem reflects the behavior of smaller scale components and is constrained by the larger-scale system. Program elements developed at any level need to be consistent with elements developed at larger and smaller scales. Thus the vision and objectives for the Columbia River Basin will constrain and direct the vision and objectives for an ecological province and, in turn, the vision and objectives for individual subbasins and watersheds. Achieving the objectives at the basin and province levels will depend largely on the success of actions at the local levels.

The Fish and Wildlife Service added that basin wide actions are imperative to ensure restoration of healthy ecosystems and the ability to meet goals at the subbasin, provincial, and basin levels.

Principle 4: Ecological structure and performance are defined with respect to specific biological communities and questions.

Ecosystems and their conditions are defined in relation to a community or assemblage of interacting species and not by individual species. Efforts to maintain and restore healthy ecosystems must preserve functional links among all biota. Aquatic and terrestrial environments do not function independently of one another; plants and animals do not exist as isolated elements. Instead, they interact closely with other species and the habitat to form a system. Their ability to survive, reproduce and evolve depends not only on the hydrology, geology and climate, but also on interactions with other individuals and species through competition, predation and natural selection. In natural systems, these interactions select and develop healthy, robust populations. In highly altered systems, it is necessary to ensure that the robust populations do not conflict with the desirable species for that system or further impair the ability of the system to function.

Principle 5: Biological diversity accommodates environmental variation.

Variations in biological characteristics help species cope with environmental variation. A more diverse species or interrelated collection of species has a greater range of possible solutions to the challenges posed by variation in the environment. Biological variation is reflected in life history traits, behavior and physical features of each species. We should manage our activities to allow natural expression of biological diversity. In highly altered systems the recruitment and persistence of undesirable species contributes to an increase in species diversity. In these situations, it may actually be necessary to reduce species diversity to ensure the success of desirable species.

Principle 6: Ecosystem conditions develop primarily through natural processes.

Natural ecosystems are created, altered and maintained primarily by natural processes encompassing the entire life history of species of interest. Habitats develop in response to both biotic and abiotic influences (e.g., local hydrology, geology, climate and water quality). Species and communities develop to match the resulting habitat template. Management to achieve goals for specific species implies allowing normal ecological processes to operate and develop an appropriate environment. In highly altered systems, the ability of natural processes to promote the persistence of desirable species may be

limited. It is necessary to ensure that the “functions” that these natural processes contributed be retained in the altered system.

Principle 7: Ecological management is adaptive and experimental.

What is critical to fish and wildlife restoration in one period of time may not be critical in another as the ecosystem shifts in response to internal or external factors. As we learn about ecosystems, new strategies may be indicated. Monitoring and evaluation need to be built into management programs from the ground up, in order to provide and make use of relevant information about how actions actually affect ecosystem conditions and how those changes affect biological response.

The Fish and Wildlife Service added that large-scale actions should not be delayed (based on unresolved uncertainty), but should be implemented through carefully designed monitoring and evaluation. The high degree of risk of extinction for many populations throughout the Columbia river basin warrants immediate aggressive actions; status quo management (with better monitoring and evaluation) is a recipe for failure.

Principle 8: Human actions modify ecosystem function and biological performance.

In highly developed ecosystems like the Columbia River, human actions and technology will continue to dominate the system. However, these actions can be managed in a manner consistent with maintaining the integrity of the ecological systems.

Finally, these entities recommended a number of versions of three Management Principles, which were not in the Strawman:

Management Principles for Altered Systems:

Principle 1: Management goals and objectives for altered systems must satisfy the resource demands that were supported by the natural system.

The change in population and community composition throughout the basin has shifted the pressures of resource utilization. Although important to protect, mitigate and enhance native species, resource managers must also meet the demands placed upon the resource by the “users” of the resources. In some areas, the shift has been dramatic (e.g., blocked areas) and led to greater intensity of use on non-traditionally managed species. Therefore, resource managers within the basin must balance the management of today’s resources with the demands placed upon them by the resource users. For example, in the upper Columbia River blocked area, resource managers now focus upon resident fish (both native and non-native) and wildlife populations to meet the resource needs once met by anadromous fish.

Montana did not include the last sentence in its recommendation for Principle 1.

Principle 2: The program preference is to support and rebuild native species in native habitats, where feasible.

Fish and wildlife habitat should be protected and restored to promote production of native species, especially if these species are capable of meeting the identified resource needs for that system.

The Spokane, Coeur d’Alene, Kootenai, Kalispel and Colville Tribes added that the Council should have no interest in a program that does nothing more than simply protect fish populations from extinction at a non-fishable level, to the exclusion of developing thriving fisheries by substitution.

Principle 3: The availability and function of the habitats present in highly altered systems will dictate management decisions.

In certain instances fish and wildlife habitat has been altered to the extent that native species are ill adapted. In these situations, projects that enhance species adapted to the altered habitats are appropriate and may in fact be the only available form of mitigation.

Idaho, Washington and the Shoshone-Bannock, Burns-Paiute, Spokane, Coeur d'Alene, Kootenai, Kalispel and Colville Tribes added to Principle 3 that efforts to promote alternative species must follow a thorough evaluation of the consequences, if any, to existing native species or the practicality of restoration of native species. The Spokane, Coeur d'Alene, Kootenai, Kalispel and Colville Tribes then further added that resident fish substitution activities using introduced species should not be terminated or de-ranked in prioritization on this basis alone, without further information demonstrating the native/non-native conflicts. Montana recommended more definitively that efforts to promote alternative species must not damage existing native species or the future restoration of species. The Fish and Wildlife Service included only the statement of the principle, and ordered the principles differently.

Finding: Based on these and other recommendations and on comments on the draft program, the Council edited the scientific principles, and the preface to the principles, as presented in the Strawman, and then adopted the scientific principles into the revised program as part of the scientific foundation, at Section III.B.2. While the final wording is not precisely the same as these recommendations, the differences are not substantive, and thus the revised program is consistent with these recommendations.

The Council did not adopt the management principles as recommended into the scientific foundation section of the program. Other provisions of the revised program are consistent with these recommendations, however. For example, the vision statement (Section III.A.1), the planning assumptions (Section III.A.2), , the biological objectives (Section III.C.2.), and the habitat strategies (Section III.D.3), all state, in various ways, a program preference to support and rebuild native species in native habitats, coupled with the recognition that management decisions in highly altered ecosystems will need to work with the habitats and species present and possible and aim to satisfy the resource demands of the region within that framework. In particular, the program continues to recognize a resident fish substitution policy, generally consistent with the recommendations of the upriver tribes, while also calling for the use of introduced species to be compatible with and avoid adverse impacts on native species and habitats, consistent with Montana's recommendations, *see* Sections III.A.2, III.C.2.a.2, III.D.3.

Source: Oregon Department of Fish and Wildlife
Recommendation No. 26

Recommendation: Oregon agreed that scientific principles should describe the scientific basis of the Council's fish and wildlife program. Oregon then recommended eight scientific principles, edited versions of what appeared in the Strawman. Oregon's edits appear designed largely to make the text that was in the Strawman more clear, not to change its meaning.

Principle 1: Ecosystem structure and conditions affect biological abundance, productivity and diversity.

Goals for fish and wildlife species are achieved by protecting and restoring ecosystem structure and conditions to meet the biological needs of fish and wildlife. Efforts must protect and restore suitable conditions for habitat used throughout the life cycle. Human activities must enable the biological system

to operate in ways that ensure the survival and prosperity of fish and wildlife over the full range of environmental conditions they face in their life.

Principle 2. Ecosystems are dynamic, evolutionary and resilient.

Natural ecosystems are dynamic and constantly changing. The program should anticipate and accommodate change, and must recognize that habitat is developed and maintained through the occurrence of natural disturbances. Actions should protect and restore processes that create and maintain habitats necessary for abundant, productive and diverse fish and wildlife.

Principle 3. Ecosystem structure and conditions are affected by processes that operate on a variety of landscape scales.

The structure and conditions of an ecosystem are affected by small and large scale processes. Program elements developed at one scale need to be consistent with elements developed at larger and smaller scales. Therefore, achieving the objectives at the basin and province levels will depend largely on the success of actions at the subbasin and watershed levels.

Principle 4. Ecological structure and performance can be evaluated with respect to specific biological communities.

Ecosystems and their conditions can be evaluated in relation to a community or assemblage of interacting species. Plants and animals interact closely with each other and with the habitats they occupy and use to form a system. Their ability to survive, reproduce and evolve depends not only on the hydrology, geology and climate, but also on interactions with other individuals and species through competition, predation and natural selection. The health and robustness of plant and animal populations can be used as a gauge of the health of the ecosystems of which they are a part.

Principle 5. Biological diversity accommodates environmental variation.

Variation in biological characteristics helps species cope with environmental variation. A more diverse species or interrelated collection of species has a greater range of possible solutions to the challenges posed by variation in the environment. Biological variation is reflected in life history traits, behavior and physical features of each species. We should manage our activities to allow natural expression of biological diversity.

Principle 6. Natural processes are critical to creating and maintaining ecosystem conditions.

Natural ecosystems are created, altered and maintained primarily by natural processes. Habitats develop in response to the local hydrology, geology and climate. Species and communities develop to match the resulting habitat template. To achieve goals, management programs must allow normal ecological processes to operate and develop an appropriate environment.

Principle 7. Ecological management is adaptive and experimental.

The factors that limit the survival and productivity of fish and wildlife vary over time with changes in ecosystem structure and conditions. Ecosystem structure and conditions, and the responses of fish and wildlife to changes in their environment must be continually monitored and evaluated. Correspondingly, management programs should be designed to promote learning and to be flexible so they can be changed in response to new knowledge about successes and failures.

Principle 8. Ecosystem function and biological performance are affected by human activities.

Human activities have affected, and will continue to affect the function and biological performance of the Columbia River Basin ecosystem. These activities must be managed in ways that protect and restore ecosystem structures and conditions necessary for the survival and recovery of fish and wildlife in the basin.

Finding: The Council edited the scientific principles (and the associated description of the purpose) as presented in the Strawman, based on this and other recommendations and on comments on the draft program, and then adopted the scientific principles into the revised program as part of the scientific foundation, Section III.B.2. While the final wording is not precisely the same as this recommendation, the differences are not substantive, and thus the revised program is consistent with this recommendation.

Source: Columbia River Inter-Tribal Fish Commission
Recommendation No.: 40

Recommendation: The Commission agreed that the program should be based on a sound scientific foundation. The scientific foundation in the Strawman was an important step, but it needs further agency and technical review before it will have the level of technical capability necessary for inclusion in the program. Thus the Council should produce a draft scientific foundation document for review, solicit fish and wildlife managers' comments on this draft, and submit those comments and the draft document to the ISAB for a formal peer review, before adopting the scientific foundation as part of the program. Following the peer review, the Council staff should work collaboratively with interested parties to draft guidelines on how to apply the scientific foundation principles to hydropower, harvest, and habitat actions; this has already been done for artificial production in the Artificial Production Review report.

The Commission recommended improvements to the draft scientific foundation document in several areas. For example, the description of the hierarchical ecosystem does not recognize the significant body of work characterizing many ecosystems and their components in terms of interconnected networks or webs (food webs, energy webs, etc.). The web analogy is also much closer to how the tribes conceive of nature and their place within the ecosystem. The hierarchical characterization is also very "anadromic," based as it is on the hydrological routing of the Columbia River, and does not adequately represent the ecosystems used by many resident fish and wildlife species.

The Commission also recommended that the program's scientific principles be selected for their practical ability to guide conservation management actions. The eight scientific principles in the Strawman are primarily theoretical principles of general ecological science. The scientific foundation should extend further than general ecological science alone; the large body of specific, agreed-upon information available for the Columbia basin itself must be incorporated. The scientific principles, and associated biological objectives and performance measures derived from the scientific foundation, must be stated in practical terms customized to guide actions in each of the 4-H areas (hydropower, habitat, hatcheries and harvest). The Commission recommended the following five principles as more practical:

Principle 1: Critical ecological processes must be maintained or restored.

A long list of ecological processes can be described for the Columbia Basin Ecosystems. The specific ecological processes to be managed must be determined by the spatial and temporal needs of key migratory species (salmon: chinook, coho, steelhead and rainbow, sockeye and kokanee, and chum, lamprey), key semi-migratory or resident species (white sturgeon, bull trout, kokanee) and key habitat processes that support the desired biodiversity determined under Principle 2.

Protection and restoration of ecosystems are achieved by allowing the ecosystem to develop in a manner consistent with the biological needs of the key species throughout their life cycle. Those ecological processes that enable the full expression of a watershed's ability to support the maximum natural biodiversity must take precedence over bioengineered approaches to accommodate human

activities. The non-conservation activities of man must be adjusted to operate within a viable and supportive ecosystem.

Principle 2: Goals and objectives must come from an ecological understanding of the physical system and its biological components.

Choosing the right fish and wildlife projects to fund depends upon having well defined management goals and objectives derived from a rigorous understanding of the ecological properties of the system. A starting point is the development and use of ecological risk management tools such as population viability analyses to determine the risk of extinction for key species and minimum viable population analyses to determine the population sizes required to meet ecological and harvest goals. The use of habitat viability analysis to describe, diagnose, and prescribe treatments rounds out tools needed to develop an ecological understanding of species and watershed needs from which goals and objectives can be formulated. These tools reflect the magnitude of the natural variation in bio/geo/chemical processes within an ecosystem necessary to ensure that efforts to stabilize and reduce disturbances reflect natural dynamics.

Principle 3: External threats must be minimized and external benefits maximized.

Natural river processes must be buffered from hydrosystem, land and water use practices that disrupt natural processes, that is, buffered from processes that permit the invasion and/or have introduced exotic chemicals, plants, and animals. The salmon ecosystems of the Pacific Northwest were relatively stable and resilient to the natural perturbations. Evolution was relatively slow even during the exceptionally warm and dry period from 5500 to 2000 B.C. During this same period resource management by native cultures co-evolved within the ecosystems to meet climatic changes. The tribal nations management practices were based on traditional environmental knowledge. In this post Columbian period the rate of man-induced environmental change has outpaced the ability of the natural system and traditional cultures to co-evolve, leaving damaged human populations, ecosystems and endangered species in place of healthy, diverse, and productive fish bearing watersheds managed by robust native societies.

Principle 4: Evolutionary processes must be conserved.

Species populations need to be sufficiently large to withstand local perturbations that threaten extinction (such as the eruption of Mount Saint Helens) and ensure that species retain sufficient genetic diversity to permit adaptation to changing environments. Pre-Columbian populations have been subject to losses in genetic material and demographic instability. The preponderance of scientific knowledge demonstrates that genetic diversity is best retained when the species is subdivided into populations with numerical and genetic exchange between local populations -- that is, in a metapopulation structure. Management actions must facilitate improvements in genetic diversity and demographic stability. This principle also requires that water pathways among healthy populations be always available to straying individuals. This reinforces Principle 3 that external threats be minimized to avoid pressures outside of a species' natural rate to evolve.

Principle 5: Management must be adaptive and minimally intrusive.

Management practices should match the scale of the problem with the least amount of environmental intrusion possible. Scientifically based management must be adaptive and flexible. All programs and projects that directly impact the environment must have a monitoring and evaluation component that provides a feedback loop to management. Natural environmental changes and management actions lead directly to dynamic ecosystems. Restoration ecology is an emerging science necessitating close adherence to the principles of adaptive management.

Traditional species and ecosystems management was adaptive and characterized by an approach of minimally intrusion. This approach is consistent with modern principles of adaptive management and

led to the robust biodiversity in fish, plants, and wildlife complemented with diverse life histories. For example pre-Columbian management used selective harvest, fire management, and stock translocations moderately. Post-Colombian over-management is characterized by large-scale de-forestation, dams with poorly designed passage or none at all, and traditional hatcheries. These are all examples of poor land, water, and stock management practices. These practices are being replaced with more refined logging techniques, removal of dams or improved passage, and small scale stream/species specific conservation hatcheries to rescue and restore populations of salmonids.

Finding: The Council included the proposed scientific principles and foundation not only in the Strawman but then, as revised, as part of the draft program, for review by the fish and wildlife managers and the public generally. The reaction to this set of principles was favorable; the Council notes that even the Commission's September 2000 comments on the draft program recommended only minor edits to the principles, not their exclusion from the program or the substitution of something different. The Council decided not to submit the principles for further review by the Independent Scientific Advisory Board, because the principles have been under development for some years, and the ISAB had previously reviewed them -- the version of the scientific principles included in the Strawman and thus the subject of the recommendations of other agencies and tribes (see above) had already been revised to reflect the ISAB's comments. The revised program also charges the ISAB with the primary role in reviewing and recommending modifications to the principles in the future. The Council concluded that it was important in this first phase of the amendment process not to delay, but instead to state explicitly in the program the set of basic scientific principles that underlie the program, to respond to criticisms of past programs for being silent on this point.

The Commission's concerns seem to relate less to the substance of the scientific principles than to a perception that the proposed scientific foundation is too limited in its scope. That is, the principles ought to go beyond general ecological thought and incorporate the large body of specific, agreed-upon information available for the Columbia Basin itself, and the principles should be more practically directed toward guiding management actions. There is little in the Commission's recommendation as summarized here that the Council disagrees with or that is inconsistent with the revised program. However, the Council incorporated these points or concepts in other parts of the revised program, especially in the vision, planning assumptions, general biological objectives, and strategies. For example, the Commission's recommended principles that "critical ecological processes must be maintained or restored" and "goals and objectives must come from an ecological understanding of the physical system and its biological components" are reflected not just in Principle 4 in the revised program but also in the vision, Section III.A.1; the planning assumption on a habitat-based program, Section III.A.2; the general concept of biological objectives; Section III.C.2, the provisional biological objectives for environmental characteristics, Section III.C.2.b and Appendix D; the general linkage of biological objectives and strategies, Section III.D.2; and the habitat strategies, Section III.D.3.

Thus to the extent what the Council adopted was not consistent with this recommendation, the Council finds that what the Council did adopt is more effective than what was recommended in the protection, mitigation and enhancement of anadromous fish, resident fish and wildlife, Northwest Power Act §4(h)(7)(C), and more consistent with the recommendations and activities of a wider group of the fish and wildlife agencies and tribes in the region, §4(h)(6)(A), (7), (7)(B). However, the Council also concludes that the revised program is largely consistent with the substance of this recommendation.

Source: PNUCC
Recommendation No. 55

Recommendation: PNUCC recommended that the Council be clear in the program about the scientific assumptions guiding its policy decisions, adopting a scientific foundation proposed by the Council's science advisors to support the Council's policy decisions. The complexity of the salmon's life cycle has left the door wide open for different interpretations and applications of scientific information. The Council's analysis should use the best available peer reviewed scientific information, incorporate actual data whenever available, and be flexible enough to incorporate new information as it becomes available.

Finding: The revised program is consistent with this recommendation. The Council has relied on the best available scientific knowledge in adopting a scientific foundation for the program, consisting of a set of general ecological principles, with a detailed discussion of the principles and more specific elaboration of the scientific foundation in the Technical Appendix. The basic principles are expected to be relatively fixed, although subject to review and possible modification when the program is revised in the future. The Council intends the other aspects of the scientific foundation to change over time in response to new scientific information and the results of implementation.

Source: Public Utility District No. 1 of Chelan County
Recommendation No. 4

Recommendation: The Public Utility District No. 1 of Chelan County noted that the concept of managing around a "focal" or indicator species is good, but recommended that provinces and subbasins have the flexibility to establish their own "focal" species. At the basin level, the Council should simply encourage ecosystem management.

Finding: Consistent with this recommendation, the Council focused at the basin or program-wide level on general ecological principles and did not prescribe specific focal species for which all provinces and subbasins must plan.

Source: Sierra Club -- Columbia Basin Field Office
Recommendation No. 27

Source: Save Our Wild Salmon
Recommendation No. 29

Recommendation: These groups recommended that the program rigorously follow the basic ecological principle of providing and restoring healthier, more diverse, more productive, and better connected habitats for fish and wildlife. For anadromous and resident fish, the program should adopt the "normative river" concept of the Independent Scientific Group and reject technological fixes.

Finding: Consistent with these recommendations and the recommendations and activities of the fish and wildlife agencies and tribes, the Council adopted a foundation set of scientific principles and an associated vision, biological objectives, and strategies that call for protecting and restoring natural ecological functions, habitats and biological diversity wherever feasible, as the most appropriate means to satisfy the region's fish and wildlife protection, mitigation and recovery obligations. The Council did not use the "normative river" concept or term, as it is susceptible of many different interpretations. Also, the

Council did not “reject” the use of technology, but instead noted that non-natural interventions for fish and wildlife should be used only if consistent with the central effort to protect and restore habitat and avoid adverse impacts to native fish and wildlife species. Section III.A.2 (third planning assumption).

Source: Washington State University -- Center for Reproductive Biology
Recommendation No. 12

Recommendation: The Center recommended that an integrative scientific approach combining fish biology, habitat, and economics is required to address salmon restoration problems and develop working solutions. Utilize the universities as a resource for the program, especially in expanding the basic science and in gathering the detail required to address the salmon restoration problem.

Finding: The revised program is consistent with this recommendation. The Council did not specifically identify the universities as a resource, but university-based scientists and economists contribute significantly in the review and implementation of the program through participation on the Council’s scientific and economic advisory bodies and through sponsorship of research and other projects funded under the program.

2(b) Geographic structure, including province concept and boundaries

Source: Oregon Department of Fish and Wildlife
Recommendation No. 26

Recommendation: Oregon recommended an edited but substantively similar version of the Strawman's description of the proposed geographical structure for the revised program, including the same ecological province organization.

Finding: The Council adopted this recommendation in the revised program. Differences in wording are editorial in nature. The only substantive difference was a minor regrouping of subbasins within two upper Columbia provinces in response to the recommendations of other fish and wildlife managers, described below.

Source: U. S. Fish and Wildlife Service
Recommendation No. 46

Recommendation: The Fish and Wildlife Service recommended that the program framework be organized at the three geographic levels proposed in the Strawman -- the basin as a whole, smaller geographic divisions of the basin called ecological provinces, and subbasins that are components of each province.

Finding: The Council adopted this recommendation in the revised program.

Source: Columbia River Inter-Tribal Fish Commission
Recommendation No. 40

Recommendation: The Commission criticized the proposed provincial structure for failing to account adequately for the ecological organization of resident fish and wildlife or the metapopulation structure of fall chinook. The provinces proposed are primarily administrative subdivisions that are not necessarily better than the six subregions found in the present program. The Commission agreed that it made administrative sense to subdivide the basin into smaller units for administration, but was unconvinced that eleven subdivisions make more sense than the existing six.

The Commission also asserted that it is premature to conclude, without evidence, that animal metapopulations might conform to the proposed provincial boundaries. The province concept as described appears to be heavily influenced by the hydrology of the basin and an anadromic view. Different boundaries would likely be drawn to represent subregions based upon the ecology of resident fish or wildlife species. Fall chinook population structure cuts across several provincial boundaries, and it is also unlikely that wildlife population structures are adequately encompassed by the proposed provincial boundaries.

Considering that subbasins flow through several ecoregions, the Commission recommended that it might be more appropriate to describe the ecological structure of the basin, at least for salmon populations, as a sequence of ecological webs, rather than as an ecological hierarchy. The hydropower

system is presently managed on a basin-wide scale; it would be totally ineffective to deal with hydropower issues a few dams at a time, as implied by the proposed provincial structure.

Finding: There are a number of reasonable ways to divide the basin for more specific planning and administrative purposes, and each method has its strengths and its drawbacks. Faced with no perfect method, the Council adopted a province structure for the revised program based on “patterns related to hydrology, climate and regional geology,” creating provinces that consist of “a set of adjoining watersheds with similar ecological conditions and tributaries that ultimately connect, flowing into the same river or lake.” These physical patterns are not necessarily distinct from biological population patterns, even if the fit may not be perfect, as the Commission observed. The “[p]opulations within a province are more likely to be related to other populations within that province than to populations in other provinces,” with “[l]ife history and other characteristics that group into patterns that reflect physical habitat structure.”

Under the Northwest Power Act, the Council is required to address all of the fish and wildlife affected by the hydrosystem in the Columbia River basin. Thus the central legal and policy focus of the program is a *river basin*, and large-scale geological patterns and hydrologic connections are the base underlying the formation and functions of a river basin. These same natural features, then, offer a logical principle for ordering the program. This approach has the great added benefit of preserving subbasins as single, coherent ecological units, thereby simplifying specific planning and implementation decisions. (Many other organizational schemes, such as by vegetation patterns, break subbasins into separate pieces and then link together the pieces of different subbasins, making for a more difficult planning unit).

A critical factor in the status of fish populations, which are a central focus of the Council’s program and the region’s restoration efforts, is the quantity and quality of water flow. And flows strongly influence most other habitat characteristics. Therefore, organizing the provinces and subbasins around hydrology makes particular sense for a habitat-based program, in ways that organizing it around certain fish and wildlife populations probably would not. Moreover, an organization based on one specific population would be most unlikely to work for other fish and wildlife populations, while a pattern based on the basic geology and hydrology of the river basin affects all species.

In addition, the quantity and quality of water flow strongly influence most other habitat characteristics that affect not just fish populations but also related wildlife populations. Therefore, organizing the provinces and subbasins around hydrology makes particular sense for a habitat-based program, in ways that organizing around certain fish and wildlife populations might not. Under the Power Act, the Council is required to address all of the fish and wildlife affected by the hydrosystem in the basin. Moreover, an organization based on the structure of one or a few specific populations would be less likely to work for other fish and wildlife populations, while a pattern based on the basic geology and hydrology of the river basin affects all species.

The recommendation criticized the proposed organizational pattern, but did not offer a different organizing scheme, except to express no preference for the proposed province structure over the subregions in the current program. The recommendation also criticized the proposed province structure for being “anadromic.” This is not correct, given that provinces are ecologically related sets of subbasins defined without reference to specific species. Moreover, the recommendation inconsistently criticized the proposed province structure precisely for failing to match the population structure of fall chinook.

The Council included the proposed ecological province organization in the draft program. While the Council received comments from the upper Columbia tribes seeking a revision in the boundaries of two provinces in the upper river, the comments were otherwise supportive of or at least did not object to

the province organizational scheme. This includes the Commission's own comments in part, which repeated general concerns about the proposed province structure but then, in a redlined version of the draft program, did not object to the provinces or propose a different organizational scheme.

Finally, the Council agrees with the recommendation that there are activities that transcend specific provinces -- such as hydrosystem operations and associated mainstem water management. As a result, the revised program calls for the development of a separate mainstem plan for the program, as well as annual planning and implementation procedures for the mainstem as a whole. Also, the ecological provinces are not intended as on-going planning and implementation units in and of themselves. Specific planning and implementation will take place at the subbasin level or at the basinwide level. The provinces are indeed largely administrative units that will allow for the grouping of related subbasins for planning and project review purposes, and which will also allow for the adoption into the program of specific biological objectives for the provinces where similar environmental and population characteristics exist, guiding subbasin planning and implementation and providing a measuring point for evaluating success.

For these reasons, the Council concludes that the recommendation was less effective than what the Council adopted in assisting in the protection, mitigation and enhancement of anadromous fish, resident fish and wildlife, Northwest Power Act §4(h)(7)(C).

Source:	Spokane Tribe
Recommendation No.	28
Source:	Coeur d'Alene Tribe
Recommendation No.	42
Source:	Kalispel Tribe
Recommendation No.	48
Source:	Kootenai Tribe
Recommendation No.	50

Recommendation: These tribes recommended that the Council reorganize the proposed ecological provinces to include what they called the Upper Columbia River Basin Blocked Area Province, as described and supported in the Upper Columbia River Basin Blocked Area Provincial Amendment drafted by the Upper Columbia United Tribes. This province would be a re-configuration of the proposed Inter-Mountain and Mountain Columbia Provinces, and include the following subbasins:

- Spokane (all, not separated as in Council's proposal)
- Upper Columbia
- Nespelem
- Sanpoil
- Colville
- Kettle
- Coeur d'Alene
- Lower Pend Oreille
- Upper Pend Oreille
- Priest
- Kootenai
- numerous minor tributaries to the Upper Columbia River
- mainstem Columbia River between and including Chief Joseph Dam and the US/Canada Border

The Coeur d'Alene Tribe added that the Council's province level boundaries did not conform appropriately to ecosystem characteristics and relevant management jurisdictions, and that it would be inefficient for the Council to overlay a new set of artificial boundaries onto a map that already includes non-aligned boundaries for numerous state, tribal, local and federal watershed planning units. To that comment the Spokane Tribe further added that the Council based its province boundaries on climate patterns and regional geology, whereas other entities based their planning boundaries on vegetation patterns, terrain features, and political jurisdictions. The program should allow flexibility for the managers and stakeholders to revise province boundaries through the subbasin assessment and planning processes. The Spokane Tribe agreed that the Columbia River Basin is too large to manage as a single geographic area, and that management at the subbasin level is appropriate as long as the interrelationships of subbasins are acknowledged.

Finding: Based on this recommendation and on subsequent comments from the same tribes, the Council modified the boundaries of the Inter-Mountain and Mountain Columbia provinces, shifting subbasins so that the Inter-Mountain province resembles the upper Columbia province recommended here. For a response to the general concerns expressed, *see* the finding immediately above.

Source: National Marine Fisheries Service
Recommendation No. 54

Recommendation: The National Marine Fisheries Service recommended that the Council designate the mainstem lower Snake and Columbia Rivers (from Lewiston Idaho to below Bonneville Dam) as a separate province or subbasin for planning purposes. The Fisheries Service understood from the Strawman that the Snake and mainstem Columbia Rivers would be considered to be part of the provinces, i.e., divided up based on provincial boundaries, which the Service considered an inappropriate subdivision of the mainstem system. Because of the continuity of mainstem "habitat" created by the dams and reservoirs, and because of its dissimilarity to the tributaries which feed into the mainstem, the Fisheries Service urged the Council to designate the mainstems of the Snake and Columbia rivers as either a separate subbasin or province. Such designation would not only recognize how mainstem issues are addressed, but would also provide a "planning home" for integration of the myriad activities currently underway, as well as new ones to be undertaken relative to the NMFS 2000 Biological Opinion.

Finding: The Council agreed with the recommendation that there are activities which transcend specific provinces -- such as hydrosystem operations and associated mainstem water management. As a result, the revised program calls for the development of a mainstem plan for the program as well as annual planning and implementation procedures for the mainstem as a whole.

Source: Hiram Li -- Oregon Cooperative Fish and Wildlife Research Unit
Recommendation No. 16

Recommendation: Mr. Li recommended a geographical structure dividing the basin into landscape regions makes sense because landscapes reflect similar environmental and land use constraints on the ecological functioning of watersheds. All other things being equal, similar types of limiting factors may be operating in that region, and thus a concentrated effort across the landscape scale to reduce those factors becomes possible. Landscape regions should be populated by genetically similar stocks, thereby favoring large, coordinated management experiments. Alternatively, regions could be defined by the criteria of genetic stock structure or by phenotypic diversity. Management could then be driven directly

by concerns for the persistence of genetic groups using the appropriate metapopulation models (Levins' model, source-sink model, core-satellite model).

Finding: The revised program is consistent with the first alternative in this recommendation -- an organization of the basin into ecological provinces that are internally similar in terms of the geographical and hydrological constraints on the functioning of the watersheds in that province.

2(c) Loss assessment/mitigation issues in general

Source: Oregon Department of Fish and Wildlife
Recommendation No. 26

Recommendation: Oregon noted that in 1986, the Council estimated the annual losses of adult salmon and steelhead caused by the development and operation of the federal hydrosystem to be from five to eleven million, when compared to annual run sizes in the 1980's of about 2.5 million. The Council estimated that approximately half of the annual losses were due to the fact that areas previously accessible to anadromous fish were now blocked, and the other half due to the effect of the projects on migrating juveniles and adults. This estimate represented the annual reduction in numbers of adult salmon and steelhead returning to the Columbia Basin to spawn and did not reflect the cumulative loss over the life of the federal hydrosystem. Oregon then recommended that the program contain objectives and measures to mitigate fully for these losses, and that the program retain and expand the hydrosystem operational and structural measures and the resident fish substitution projects to address the unmitigated losses of salmon and steelhead attributable to development or operation of hydropower projects.

Oregon also noted that a number of native resident fish populations throughout the basin are so depressed to an extent that they require immediate attention, recommending that the program call for the completion of assessments of resident fish losses throughout the Columbia Basin and for immediate actions to protect healthy populations and ensure the survival and recovery of listed fish species. The program should contain measures that fully mitigate for resident fish losses.

Finding: The revised program is consistent with this recommendation. The program identifies the Power Act obligation to mitigate for the losses caused by the hydrosystem as an underlying basis for understanding and developing the program's basinwide biological objectives for population performance, Section III.C.2.a. The same section sets forth a number of objectives for population characteristics that culminate in a long-term objective of achieving "population characteristics that, while fluctuating due to natural variability, represent on average full mitigation for losses of anadromous fish," Section III.C.2.a.1. This section also calls for completing assessments of resident fish losses, and states a similar long-term objective to achieve population characteristics of resident fish "within 100 years that, while fluctuating due to natural variability, represent on average full mitigation for losses of resident fish," Section III.C.2.a.3. The revised program also continues the resident fish substitution policy to mitigate for salmon and steelhead losses in blocked areas, Sections III.C.2.a.2, III.D.2 and .3. Operational and structural measures for the hydrosystem will be addressed in a subsequent phase of the program revision process, *see* Sections III.D.6; VIII.1.

Source: Bonneville Power Administration
Recommendation No. 37

Recommendation: Bonneville provided an extensive discussion of the current wildlife crediting system and recommended that the program incorporate a similar crediting system for non-wildlife projects, emphasizing the following principles:

- Bonneville needs credit when it implements a successful habitat mitigation project. It makes no difference whether the primary focus of an action is anadromous fish or watersheds; if it improves or secures habitat, the ratepayers' contribution must be recognized.
- Bonneville needs credit whenever the action mitigates fish and wildlife or their habitats-- regardless of the initial legal or policy impetus for taking the action.

- Crediting should be in terms of habitat quality and quantity. Fish and wildlife populations typically fluctuate too much to be fair or accurate gauges of the effectiveness of a particular mitigation.
- Crediting should be 1:1; that is, one credit for each habitat unit of equal quality mitigated.
- The region should use a habitat evaluation process to assess quality and quantity of habitat. Such models could be developed for all aquatic and terrestrial species subject to mitigation under the Act.
- Bonneville mitigates for hydrosystem construction and operation losses.
- When the power impacts on a species or habitat are difficult or impossible to quantify, then Bonneville could mitigate in habitats which currently support core populations, and improve those habitats and surrounding habitats to secure those populations. Habitat models reflecting properly functioning conditions could be used to show when Bonneville has restored the amount of habitat lost through hydrosystem development and operation.
- Where it is impossible to accurately translate habitat improvements into species improvements, credit should be based on the best available science, using analytical tools and models such as (but not limited to) the Council's Ecosystem Diagnostic and Treatment model.

Finding: The Council did not adopt a program-wide mitigation crediting scheme in this phase of the program revision process, although it clarified the program's mitigation crediting policy with regard to wildlife, *see* Section III.D.7. The revised program does set the stage for the development of a crediting approach along the lines of Bonneville recommendation. It does so by virtue of its emphasis on a habitat-based program in which (1) biological performance objectives are to be based in the fish and wildlife losses caused by the construction and operation of the hydrosystem, which require mitigation under the Power Act, and then (2) by stating objectives for the environmental conditions and habitat changes required to allow the system to mitigate for those losses. As the Council develops the program in more detail based on this framework, that will be the time to consider the adoption of a crediting mechanism beyond the wildlife section that matches actions to fulfillment of the specific biological objectives.

Source: Shoshone-Paiute Tribes
Recommendation No. 23

Recommendation: The Shoshone-Paiute Tribes recommended a number of general principles relating to losses due to the development and operation of the hydrosystem and the required mitigation for those losses:

- Develop and fund fish and wildlife mitigation, especially in blocked areas for future protection, mitigation and enhancement.
- Base compensation on the loss of historical populations and potential harvest of fish and wildlife as well as on the loss of habitat and species of fish and wildlife, not actual current populations of species present.
- Hold all entities responsible for expenses incurred for reduction and extirpation of native species of fish and wildlife (i.e., including those who introduced exotic species that have caused genetic introgression of native species).
- Mitigate for resident fish populations lost due to the loss of ecological functions and relationships as a result of anadromous fish resources no longer present in the blocked areas.
- Mitigate for anadromous fish losses in the areas where they have been extirpated until the time anadromous fish return to these areas.
- Mitigate for cultural resources lost due to the construction and operation of the federal hydropower system.

Finding: The revised program is largely consistent with this recommendation. The program recognizes as a basis for program-wide biological objectives the obligation to mitigate for fish and wildlife losses caused by the hydrosystem. The program continues the policy of fish and wildlife mitigation in the blocked areas and other places where anadromous fish have been extirpated. Also, the biological objectives related to mitigation for affected fish populations recognize the loss of ecological functions and relationships as a key aspect of the mitigation effort.

The Power Act calls on the Council to develop a program to protect, mitigate and enhance *fish and wildlife* affected by the development and operation of the hydrosystem. While the Council is sensitive to the tribes concern for impacts to *cultural* resources, it would be beyond the scope of the Power Act, and thus beyond the authority of the Council in revising the program, to call for mitigation for cultural resources lost due to the construction and operation of the hydrosystem. This is an issue the tribes have to address directly to the federal agencies. Also, the Power Act's focus, and thus the program's focus, is on the responsibility of the *hydrosystem* for adverse effects to fish and wildlife, not on the responsibility of everyone who adversely affected fish and wildlife, including those who introduced exotic species to the detriment of native species. The program has to be aware of these kinds of past and present impacts, in order to understand what is the obligation of the hydrosystem under the Power Act compared to the obligations of others, to be able to call for the equitable sharing of the costs of the overall responsibility to improve fish and wildlife conditions in the basin, and to protect what investments the program does make to enhance native species. That is not the same as using the program to assign responsibility to and assess program expenses on everyone whose activities adversely impacted native fish. That is beyond the authority or the capacity of the Council and the program.

Source: Columbia River Alliance
Recommendation No. 39

Recommendation: The Columbia River Alliance recommended that the Council re-evaluate the extent to which the hydrosystem, as presently configured and operated, has an adverse impact on salmon and steelhead stocks in the Columbia River Basin. The Council should assess the success and accomplishments of past mitigation efforts against the effects of present dam operations to determine whether and to what extent additional efforts to protect, mitigate and enhance fish and wildlife are appropriate. The Alliance submitted a legal memorandum with an extensive discussion questioning the legal obligation of the hydrosystem to further mitigate salmon losses, pointing to evidence that suggests no presently measurable adverse effects on salmon from the dams.

The Alliance also recommended that the Council consider calls for a "normative" river and for dam breaching to be inconsistent with past mitigation efforts and to represent an unlawful attempt to impose new and substantial remedial obligations on federal dam operators. Recommendations for "normative river" conditions, to the extent that they mean something other than continued operation of the Federal Columbia River Power System and other hydroelectric facilities, fall outside of Congress' charge to the Council. As a political matter, the Council can recommend anything it wants to Congress, but the Council's fish and wildlife program has legitimacy, and legal effect upon dam operators, only to the extent that it guides continued operation of hydropower facilities.

The Alliance also recommended that the program liquidate and cap the current habitat mitigation efforts funded by Bonneville, substitute the Bonneville Environmental Foundation or some other vehicle for habitat grants, and create a one-time endowment of habitat funding with monies saved through mainstem operational changes.

Finally, the Alliance recommended that the program give dam operators credit for cash mitigation efforts by the federal government. One possible explanation for the fishery managers' decision to focus on lower river mitigation efforts is that upriver fishery interests have received large cash payments in compensation over the years from federal dam operators. Many of these payments were made to the tribes. Payments to the tribes amount to a buy-out of obligations that would otherwise arise under relevant treaties or other federal law. The Alliance stated that Congress plainly did not intend mitigation for hydropower losses to include both restoration of salmon runs and full payment for lost runs, yet the Alliance was unaware of any effort to credit ratepayers for these and other payments against salmon losses.

Finding: The revised program is partially consistent with this recommendation. The program as revised does not call for anything other than the continued operation of the Federal Columbia River Power System.

The Council decided not to undertake a re-assessment of the salmon and steelhead losses estimates completed in the late 1980's. That was an enormously time consuming and expensive process, and the Council deemed it to be an imprudent investment of staff time, funding and other resources to revisit those loss estimates at this time. There was no support for this recommendation from any other entity, as shown not only by recommendations and comments from fish and wildlife agencies and tribes (e.g., see the recommendation above of the Oregon Department of Fish and Wildlife), but also by the fact that none of the other governmental and private entities, including Bonneville, recommended a new loss assessment effort or commented in favor of one.

On the other hand, as noted in response to the Bonneville recommendation above, there is an interest in the development of a usable approach to determining how to credit mitigation against losses in parts of the program other than wildlife. The revised program has, for really the first time, the kind of framework, approach to biological objectives, and analytical methods that should, if developed further in the proper way, allow the Council and others to assess the extent to which population and habitat conditions have changed due to hydropower development and operations and then the extent to which past and future mitigation efforts have addressed and might address those effects. If this analytical approach is carried out as proposed, not only will the Council and the program be able to roughly determine how much mitigation credit to assign to an action, it will also be able to revisit the extent of the mitigation obligation itself.

Nothing in the Power Act or its legislative history authorizes the Council to accept, as part of the program, monetary payments made by the federal government to the tribes (or anyone else) in partial compensation for the adverse effects of the hydrosystem, in lieu of taking actions under the program to protect and increase fish and wildlife, including related spawning grounds and habitat, affected by the hydrosystem. The Power Act calls on the Council to develop a program to protect, mitigate and enhance *fish and wildlife* affected by the hydrosystem, and then for Bonneville to use its fund to protect, mitigate and enhance *fish and wildlife* in a manner consistent with the program. The program's focus or scope is improvement in the conditions of fish and wildlife and fish and wildlife habitat, not monetary payments, in mitigation for adverse effects on fish and wildlife and habitat. The part of the recommendation specifically concerning an endowment for habitat funding is discussed below under habitat strategies.

For these reasons, the Council finds that to accept these aspects of the recommendation into the program would be inconsistent with the Northwest Power Act; would not complement the activities and recommendations of the region's fish and wildlife agencies and tribes, Northwest Power Act §4(h)(6)(A), (7)(B); and would be less effective than what the Council adopted in ensuring the protection, mitigation and enhancement of anadromous fish, resident fish and wildlife, §4(h)(7)(C).

3. Program at the basin level

3(a) Vision (basin level)

Source: Oregon Department of Fish and Wildlife
Recommendation No. 26

Recommendation: Oregon recommended as the long-term vision for the revised program: “A Columbia River ecosystem that protects, mitigates and enhances the abundance, productivity and diversity of biological communities and habitats that have historically contributed to the environmental, social, cultural, and economic well being of the Columbia River Basin. The program provides ecological conditions that recover species listed under the Endangered Species Act, meet water quality standards under the Clean Water Act, mitigate for known losses, and provide abundant and productive fish and wildlife to support tribal harvest guaranteed by law and treaty. The program requires restoration of ecosystem functions and habitats that have been altered or lost. The ecosystem envisioned by the program is ecologically resilient and able to maintain its characteristics in the face of environmental variation.” The program’s vision should state explicitly the program’s intent to mitigate fully for impacts the federal hydrosystem has had on fish and wildlife, based on Section 4(h)(5) of the Northwest Power Act.

Finding: The revised program is consistent with this recommendation, although the elements of the recommendation are found scattered beyond the program’s statement of a vision for the basin. The most basic elements of the recommendation are all represented in the revised program’s vision: (1) the Power Act mitigation obligation as central to the program; (2) a focus on the habitats of the basin’s fish and wildlife, and on the diversity and productivity of those populations, and not just on fish and wildlife abundance or numbers; (3) a focus on providing the environmental conditions that will allow for these kinds of population characteristics, providing the opportunity both for recovery of species listed under the Endangered Species Act and for tribal and non-tribal harvest and the other aspects of the basin’s fish and wildlife that contribute to the environmental, social, cultural and economic well-being of the region; and (4) providing these conditions while also assuring the region an adequate, efficient, economical and reliable power supply, as required by section 4(h)(5) of the Power Act. The biological objectives in the revised program capture the concepts of identifying the hydropower losses that are the basis for mitigation and the program’s long-term objective of the equivalent of full mitigation. The scientific foundation captures the importance of resilience in the ecosystem. The Clean Water Act water quality standards are not mentioned in the vision, but other sections of the revised program, especially the hydrosystem strategies (Section III.D.6) and subbasin planning provisions (section V), discuss the need to integrate planning and implementation of the program with planning and implementation under the Clean Water Act.

Source: Confederated Tribes of the Warm Springs Reservation
Recommendation No. 21

Recommendation: The Warm Springs Tribes’ goal for the Columbia Basin is to recover anadromous fish populations to sustainable, harvestable levels.

Finding: This is part of the vision in the revised program.

Source: Shoshone-Bannock Tribes
Recommendation No. 38

Recommendation: The Shoshone-Bannock Tribes recommended for the program's vision: "Through the restoration of a healthy, functioning ecosystem, protect, mitigate, and enhance populations of fish and wildlife in the Columbia River Basin. Do this at a level that ensures survival and recovery of all listed species, provides for tribal harvest opportunities guaranteed by law and treaty, and takes into account the needs of people in the Northwest, while maintaining an adequate, efficient, economical, and reliable electrical power supply."

Finding: The revised program is consistent with this recommendation. The Shoshone-Bannock Tribes supported and based their recommendation on the proposed vision in the Strawman. The wording and extent of the vision in the revised program differs from the proposed vision in the Strawman, based on the Council's consideration of the recommendations and comments. However, the substantive elements of this recommendation are contained in the revised program's vision.

Source: Shoshone-Paiute Tribes
Recommendation No. 23

Recommendation: The Shoshone-Paiute Tribes recommended as the vision for the revised program: "To once again have a healthy ecosystem that supports and protects all species of fish and wildlife, including anadromous fish, in all areas of the basin especially the blocked areas."

Finding: The vision in the revised program is consistent with the recommendation's call for ecosystem conditions that support abundant, productive and diverse fish and wildlife populations. In addition, the vision and other portions of the program, especially the biological objectives, the matrix and text linking the biological objectives and strategies, and the habitat strategies, include objectives and strategies calling for protection and enhancement of fish and wildlife and habitats in the blocked areas and actions to reintroduce anadromous fish into blocked areas where feasible.

Habitat conditions that favor certain kinds of fish or wildlife species may not support others, so it is not possible to support and protect all possible species in the basin, as this recommendation seems to call for. Based on other recommendations and comments, the revised program states a preference for protecting and restoring native species in native habitats, and where that is not feasible, the program will protect and enhance the habitat and species assemblages compatible with the altered ecosystem and naturally reproducing fish and wildlife populations in that area. If the recommendation is calling for something other than this approach, to accept that aspect of the recommendation would be incompatible with the recommendations and activities of the other fish and wildlife agencies and tribes, Northwest Power Act §4(h)(6)(A), (7)(B), and less effective than what the Council did adopt in the protection, mitigation and enhancement of anadromous fish, resident fish and wildlife, Power Act §4(h)(7)(C).

Source: Idaho Department of Fish and Game
Recommendation No. 36

Recommendation: Idaho recommended the following vision and goal for the revised program:

Vision

The Columbia River Basin is a healthy, functioning ecosystem that supports viable fish and wildlife populations at levels sufficient to produce an annual harvestable surplus of game species and sustainable populations of non-game species. Salmon and steelhead will, once again, become a symbol of the immense productivity of the Pacific Northwest rather than a symbol of divisive debate and ecological ruin.

Goal

Fully mitigate losses to fish and wildlife that have resulted from the development and construction of the Federal Columbia River Power System and other federally regulated hydropower facilities while emphasizing the genetic integrity of wild and native stocks. "Full mitigation" is defined as that point in time when fish and wildlife and their habitats have been protected, mitigated, and enhanced to the extent affected by the development and operation of the Federal Columbia River Power System and other federally regulated hydropower facilities. Full mitigation occurs when these effects are completely addressed as when mitigation actually offsets the full, cumulative, and total loss caused by the Federal Columbia River Power System and other federally regulated hydropower.

Finding: The vision in the revised program is consistent in meaning with this recommendation, envisioning a Columbia River ecosystem that sustains an abundant, productive, and diverse community of fish and wildlife, mitigating across the basin for the adverse effects to fish and wildlife caused by the development and operation of the hydrosystem, providing the benefits from fish and wildlife valued by the people of the region (which obviously include salmon and steelhead, even if not mentioned explicitly), including abundant opportunities for harvest and the recovery of listed species.

The revised program is also consistent with the recommendation, in this way. The Council, consistent with this and other recommendations and comments, recognized in the vision and in the section on biological objectives that significant losses of anadromous fish, resident fish, and wildlife and their habitats have occurred as a result of the development and operation of the hydrosystem, and that to be consistent with the Power Act, these losses should establish the underlying basis for objectives for the program as a whole. Collectively the biological objectives should represent what is expected to achieve mitigation for these losses under the program. The revised program then states the long-term objective for the program of achieving, within 100 years, anadromous and resident fish population characteristics that, while fluctuating due to natural variability, represent on average full mitigation for losses of anadromous fish, as well as full mitigation for identified wildlife losses. *See* Section III.C.2.a. These are interim objectives, to be considered further and defined more specifically as the Council completes the revision of the program.

Source:	Spokane Tribe
Recommendation No.	28
Source:	Montana Fish, Wildlife and Parks
Recommendation No.	31
Source:	Burns-Paiute Tribe
Recommendation No.	34
Source:	Shoshone-Bannock Tribes
Recommendation No.	38
Source:	Columbia River Inter-Tribal Fish Commission
Recommendation No.	40
Source:	Coeur d'Alene Tribe
Recommendation No.	42
Source:	U.S. Fish and Wildlife Service
Recommendation No.	46
Source:	Kalispel Tribe
Recommendation No.	48
Source:	Kootenai Tribe
Recommendation No.	50

Recommendation: These fish and wildlife agencies and tribes all recommended some version of the following as the vision for the revised program:

The vision is to restore (or, promote) sustainable, naturally producing fish and wildlife populations to support tribal and non-tribal harvest and cultural and economic practices. This will be achieved by restoring the biological (or, ecological) integrity and the genetic diversity of the Columbia River ecosystem and through other measures that are compatible with naturally-producing fish and wildlife populations. This goal is intended to fulfill the nation's and the region's obligations under treaties and executive orders with Northwest Indian tribes, treaties with Canada, and applicable resource protection, restoration and enhancement statutes and regulations.

Several of the recommending entities emphasized that this recommended vision, the proposed vision for the Columbia River Basin stated in the Council's Strawman, the previous program's Systemwide Goal, and the Tribal Vision Paper's goal all share several points: First, the region wants more fish and wildlife. Second, these increases should be based on, or at least consistent with, natural populations in functioning ecosystems. Third, an important purpose for the increases is to allow tribal members and the general public to hunt and fish.

Most of these recommending entities then supplemented this general vision or goal statement with subordinate statements of vision or goals. These are summarized separately below.

Finding: The revised program is consistent with this recommendation. While the vision statement in the revised program differs in wording from what is recommended here, the differences are not substantive. The Council based the program's vision largely on this and similar recommendations, and so the key elements of the recommended vision are encompassed in the program's vision.

Source: Colville Confederated Tribes
Recommendation No. 33
Source: Burns-Paiute Tribe
Recommendation No. 34
Source: Shoshone-Bannock Tribes
Recommendation No. 38

Recommendation: The Colville Tribes recommended a vision that differed somewhat from the vision recommended by the other agencies and tribes, above. The Colville Tribes' recommended vision is not necessarily inconsistent with the other recommendation, as indicated by the fact that the Shoshone-Bannock and Burns-Paiute Tribes combined the two in their recommendations.

The recommended vision is “[a] functioning (or, healthy) Columbia Basin, one that supports both human settlement (or, supports tribal and non-tribal harvest and cultural and economic practices) and the long-term sustainability of native fish and wildlife species in native habitats where possible, while recognizing that where impacts have irrevocably changed the ecosystem, we must protect and enhance the habitat and species assemblages that remain. To implement this goal, the program will deal with the Columbia Basin as a system; will protect, mitigate and enhance fish and wildlife while assuring an adequate, efficient, economical and reliable power supply; and will be consistent with the activities of the fish and wildlife agencies and tribes.”

Finding: The revised program is consistent with this recommendation. The key elements of the recommendation are (1) a functioning or healthy Columbia Basin ecosystem; (2) an ecosystem that supports human settlement, including tribal and non-tribal harvest and cultural and economic practices, and the long-term sustainability of fish and wildlife; (3) a preference for supporting native fish and wildlife species in native habitats where possible; (4) but with recognition that where impacts have irrevocably changed the ecosystem, the program we must protect and enhance the habitat and species assemblages that remain; (5) the program must deal with the Columbia Basin as an integrate, coordinated system to achieve this vision; (6) the program must protect, mitigate and enhance fish and wildlife while assuring an adequate, efficient, economical and reliable power supply; and (7) the program must be consistent with the activities of the fish and wildlife agencies and tribes.” A number of these concepts are imposed by the Power Act and thus a given in the program, such as the requirement that the program complement the activities of the fish and wildlife agencies and tribes, or the requirement that the Council adopt a program to protect, mitigate and enhance fish and wildlife while assuring the region an adequate, efficient, economical and reliable power supply. All of these elements can be found somewhere in the revised program, spread especially through the vision (Section III.A.1), the planning assumptions (Section III.A.2), the biological objectives (Section III.C.1, .2.a, and .2.b), the general biological objectives/strategies linkage (Section III.D.2), and the habitat strategies (Section III.D.3).

Source: Columbia River Inter-Tribal Fish Commission
Recommendation No. 40

Recommendation: The Commission appended to its recommended vision (summarized above, as part of a collection of similar recommendations) a longer statement that it recommended as an appendix to the program. This statement essentially summarized all of the Commission's recommendations on goals, objectives and strategies. The portions of that statement that relate to the category of vision and goals are summarized here.

The Commission stated that the tribal vision for the future of the Columbia River Basin is one in which people return to a more balanced and harmonious relationship with the environment. It is a vision for the future based both on past tribal teachings and practices and on current science. It is a vision in which science serves our teachings and practices, but does not overshadow them.

The tribal vision for the future is one where all watersheds -- from the smallest individual tributary to the basin as whole -- are once again regarded with respect and reverence for what they truly and inescapably are -- home. It is a vision in which we once again return to the notion that we must nurture and sustain our home as it nurtures and sustains us, where people, fish, wildlife, plants and other natural and cultural resources are once again biologically healthy and self-sustaining. It is a vision of a healthy Columbia River Basin ecosystem also characterized by clean air and clean water, that not only supports viable and genetically diverse fish and wildlife resources that provide direct benefits to society, through harvest and improved physical health of tribal and non-tribal members, but also nourishes the spirit. It is a vision in which tribal sovereignty, treaty rights and the trust responsibility are honored, respected and fulfilled. In achieving this vision, both Indian and non-Indian people, and our shared home, will all ultimately benefit.

The tribal vision for the future of the Columbia River Basin has specific, measurable short-term and long-term goals and objectives, to be achieved by clearly defined strategies and actions. The tribes' collective aim is to maintain, protect and enhance currently healthy, natural ecosystems and habitat, and all their human and non-human resources. The aim is to restore, rebuild and reclaim those areas and resources suffering from past misuse and abuse, and halt any such ongoing occurrences. This vision includes stable, locally adapted Upper Columbia River and Upper Snake River ecosystems. These systems should contain naturally producing, sustainable, harvestable resident fish, reintroduced anadromous fish populations, and wildlife populations that are comparable in health and abundance to historic, pre-development conditions. The current plight of the fish and wildlife populations of the Columbia Basin attest to an ongoing lack of "balance" between economic interests and environmental protection. Redirection of emphasis is required to address these needs.

The Commission then recommended the following goals and objectives to characterize the future Columbia River Basin:

- Biologically healthy, self-sustaining and harvestable anadromous and resident fish, wildlife and other plant and animal populations and communities, within the following specific time frames:
 1. Within 3 years, halt the decline of salmon, sturgeon and lamprey originating above Bonneville Dam.
 2. Within 21 years, increase the total adult salmon returns of stocks originating above Bonneville Dam to 4 million annually, in a manner that sustains natural production and supports tribal ceremonial, subsistence and commercial harvests.
 3. Within 21 years, increase sturgeon and lamprey populations to naturally sustainable levels that also support tribal harvest.
 4. Within 10 years, reintroduce anadromous salmon above Chief Joseph and Grand Coulee dams; within 50 years reestablish populations of salmon above these dams.
 5. In perpetuity, protect and restore fish and wildlife and the aquatic and terrestrial ecosystems on which they directly and indirectly depend.
- Improve environmental and habitat conditions necessary for such populations and communities to survive and thrive, achieved in part by re-establishing normative functions including more natural river levels and hydrographs.
- Rebuild resource populations and ecosystem conditions that provide for human sustenance, increased health, and support for the traditional economic, cultural and spiritual needs and practices of the tribes, including harvest throughout the international basin.

- Allow for the free exercise of tribal sovereignty and treaty rights.
- Continue habitat protection and enhancement through land acquisitions, land trusts, conservation easements and similar mechanisms.
- Restore anadromous salmon productivity by achieving, at a minimum, survival rates at each life history stage as is expressed in *Wy-Kan-Ush-Mi Wa-Kish-Wit (Spirit of the Salmon)*.

Finding: With exceptions noted below, the Council adopted provisions that are generally consistent with the Commission’s recommendations for the vision and basinwide objectives of the program, if not as extensive.. Some of the concepts in the Commission’s recommendation were captured in the revised program’s vision statement; others were included elsewhere, especially in the biological objectives and habitat strategies. For example, based on comments received on the draft program from the Commission (and others), the Council added to the biological objectives section an interim set of regional biological performances objectives for anadromous fish (subject to review and possible revision after the completion of subbasin plans) that are consistent with the population objectives and time frames in the recommendation here, *see* Section III.C.2.a.1.

There are elements of the recommendation that the Council did not adopt. First, the Commission’s recommendation envisions fish and wildlife populations comparable in health and abundance to historic, pre-development conditions. The vision in the revised program is of a basin ecosystem that sustains an abundant, productive, and diverse community of fish and wildlife, mitigating across the basin for the adverse effects to fish and wildlife caused by the development and operation of the hydrosystem. This ecosystem will provide the benefits from fish and wildlife valued by the people of the region, to be accomplished where feasible by protecting and restoring the natural ecological functions, habitats, and biological diversity of the Columbia River Basin. The vision calls for a substantial change in the trends of the last century, but it does not call for the restoration of pre-development conditions. The Council’s responsibility under the Power Act is to develop a program that mitigates for the effects of the development and operation of the hydrosystem on fish and wildlife, not for the adverse effects of all development, which go well beyond the damage related to the hydrosystem. Moreover, the Power Act directs the Council to plan for protection and mitigation, not restoration to pre-development conditions.

Also, the Commission’s recommendation specifically envisions the reintroduction and re-establishment of abundant runs of anadromous fish above Chief Joseph/Grand Coulee dams. The revised program does not provide such a specific objective at this stage in the program revision process. Instead, the revised program states as a planning assumption that “[r]estoration of anadromous fish into areas blocked by dams should be actively pursued where feasible,” with a corresponding biological objective. The Council believes stating the program’s reintroduction objective in a more exploratory fashion is consistent with the magnitude of the proposal and with the Council’s process for revising the program, in which specific objectives and measures are adopted only after more detailed consideration of the biological and other issues at the finer geographic scale and of the power supply effects.

Thus while the Council concludes that the revised program is generally consistent with this recommendation, to the extent they differ, the Council concludes that what the Council adopted is more consistent with the Power Act, better complements the activities, recommendations and comments of the other fish and wildlife agencies and tribes, Northwest Power Act §4(h)(6)(A), (7)(B), and ultimately is more effective than what the Commission recommended for the protection, mitigation and enhancement of anadromous fish, resident fish and wildlife, §4(h)(7)(C).

Source:	Spokane Tribe
Recommendation No.	28
Source:	Montana Fish, Wildlife and Parks
Recommendation No.	31
Source:	Colville Confederated Tribes
Recommendation No.	33
Source:	Burns-Paiute Tribe
Recommendation No.	34
Source:	Shoshone-Bannock Tribes
Recommendation No.	38
Source:	Coeur d'Alene Tribe
Recommendation No.	42
Source:	Washington Department of Fish and Wildlife
Recommendation No.	43
Source:	U.S. Fish and Wildlife Service
Recommendation No.	46
Source:	Kalispel Tribe
Recommendation No.	48
Source:	Kootenai Tribe
Recommendation No.	50

Recommendation: As part of their recommendations for a vision for the program, a number of the fish and wildlife agencies and tribes recommended various versions of a statement of “basinwide” or “regional” “goals” or “objectives” for anadromous fish, resident fish and wildlife. Montana recommended these only for resident fish and wildlife. Other differences among what were otherwise generally consistent recommendations are noted below.

Regional (or, Basinwide) Anadromous Fish Goals (or, Objectives)

- By 2005, halt the declining trend in salmon and steelhead populations above Bonneville Dam. (Washington included white sturgeon.)
- Restore healthy, naturally reproducing populations of salmon in each subregion accessible to salmon. Healthy populations are defined as having an 80 percent probability of maintaining themselves for 200 years at a level that can support harvest rates of at least 30 percent. (Washington included steelhead and white sturgeon.)
- By 2001, obtain the information necessary to manage and restore Pacific lamprey.
- By 2025, increase the total adult salmon and steelhead returns above Bonneville Dam to 5 million annually in a manner that supports tribal and non-tribal harvest.
- Fully mitigate within 100 years for the annual losses of 5 to 11 million anadromous fish, as well as resident fish and wildlife.
- By 2005, initiate a program to restore anadromous salmonids above Grand Coulee Dam. (Washington, the Burns-Paiute Tribe and the Colville Tribes did not include this objective in their recommended goals.)
- By 2025, restore anadromous fish runs above Grand Coulee Dam. (Washington, the Burns-Paiute Tribe and the Colville Tribes did not include this objective in their recommendations.)
- By 2100, restore a self-sustaining anadromous fish population above Grand Coulee Dam, sufficient to provide a harvestable surplus to meet traditional harvest levels. (Washington, the Burns-Paiute Tribe and the Colville Tribes did not include this objective in their recommendations.)

- The Shoshone-Bannock Tribes added: Immediately restore and re introduce healthy and naturally reproducing anadromous fish populations throughout their historic range, and immediately implement actions to increase survival at all life stages for anadromous fish.
- Washington added: Assist in the development and implementation of ESA recovery plans for listed species in the basin.

Regional (or, Basinwide) Resident Fish Goals (or Objectives)

- Conduct assessments of losses of resident fish due to the construction and inundation of federal hydropower system reservoirs. (The Colville Tribes and Montana did not include this objective in their recommendations.)
- Mitigate and compensate for resident and anadromous fish losses caused by the construction and operation of federally operated and federally regulated hydropower projects. (The Colville Tribes emphasized the goal of “fully” mitigating for losses. Montana used slightly different wording and related the goal directly to its local situation: “Mitigate for documented losses of resident fish due to the construction and operation of federal hydropower system reservoirs, namely Hungry Horse and Libby Dams.”)
- Substitute (or, mitigate for) lost anadromous populations with resident populations to address the loss of salmon and steelhead in those areas currently blocked to anadromous fish as a result of the construction and operation of hydroelectric dams. (The Fish and Wildlife Service did not include this objective in its recommended goals. Montana used similar language to call for substitution for lost *native resident fish*, discussed below.)
- Ensure the continued persistence, health, and diversity of existing resident fish species and their habitats. (The Fish and Wildlife Service, Washington, the Shoshone-Bannock Tribes and the Burns-Paiute Tribe recommended a different version: “Ensure the continued persistence, health, and diversity of existing resident fish species by reducing or removing impacts caused by habitat degradation (including water quality, water quantity, and hydropower development), competition and/or hybridization with non-native species, and over-harvest (direct and incidental).)
- Maintain and restore functioning ecosystems and watersheds, which provide functional links among biota to ensure the continued persistence, health and diversity of all species including game fish species, non-game fish species, and other organisms. (The Fish and Wildlife Service, Washington, the Shoshone-Bannock Tribes and the Burns-Paiute Tribe used “healthy” instead of “functioning” and “preserve” instead of “provide.”)
- Restore native resident fish species (subspecies, stocks and populations) to near historic abundance throughout their historic ranges where habitats exist and where habitats can be feasibly restored. (The Shoshone-Bannock Tribes began this objective with “*Immediately* restore”)
- Administer and increase opportunities for consumptive and non-consumptive resident fisheries for native, introduced, wild, and hatchery-reared stocks that are compatible with the continued persistence of native resident fish species and their restoration to near historic abundance (includes intensive fisheries within closed or isolated systems). (The Fish and Wildlife Service did not include this objective in its recommendation. The Colville Tribes’ stated the recommended goal relating to fisheries differently: “Provide opportunities for consumptive and non-consumptive resident fisheries (support tribal and non-tribal harvest) for native, introduced, wild, and hatchery-reared stocks that are compatible with native resident fish management objectives.”)
- Mitigate and compensate for resident fish extirpation caused by the construction and operation of federally operated and federally regulated hydropower projects. (Washington recommended a slightly different version, combining the concepts of mitigating for extirpated anadromous and resident fish: “In the blocked areas, mitigate and compensate for anadromous and resident fish extirpation caused by the construction and operation of federally operated and federally regulated

hydropower projects.” Montana stated the same concept as a substitution goal: “Substitute lost native resident fish populations with appropriate sustainable fish populations in areas where native fish recovery is currently not possible. Such substitutions are possible in closed-basin lakes or isolated waters that can not be managed for native species recovery.”)

Regional (or, Basinwide) Wildlife Goals (or, Objectives)

- The wildlife goal is to achieve and sustain levels of habitat and species to mitigate for the wildlife losses that have resulted from the construction and operation of the federal and nonfederal hydroelectric system in the Columbia River Basin.
- Successfully reintroduce wildlife species throughout their historic range. (The Fish and Wildlife Service, Washington, Montana, the Burns-Paiute Tribe and the Colville Tribes did not include this objective in their recommendations.)
- The Colville Tribes and the Shoshone-Bannock Tribes added: Develop and implement mitigation plans that will fully mitigate for wildlife losses.
- Montana added: Wildlife Mitigation for the construction of Hungry Horse and Libby Dams is underway through the wildlife trust fund. The program should also compensate Montana for wildlife losses caused by the operation of federally operated and federally regulated hydropower projects.

Finding: The revised program is consistent with these recommendations, whose similarities are much greater than their differences. With regard to the anadromous fish goals or objectives, which are nearly the same as those recommended by the Columbia River Inter-Tribal Fish Commission, above, the biological performance objectives in the revised program (Section III.C.2.a.1) are based on these recommendations and similar comments on the draft program. (Sturgeon are addressed in the revised program’s resident fish objectives.) One difference between these recommendation and the revised program is that the revised program did not include the explicit objective of reintroduction and re-establishment of abundant runs of anadromous fish above Chief Joseph/Grand Coulee dams. Nor did the revised program adopt the Shoshone-Bannock Tribes’ variation, calling for immediate restoration and re introduction of healthy and naturally reproducing anadromous fish populations throughout their historic range. As noted above in the findings on the Commission’s recommendation, the Council decided not to provide such a specific objective at this stage in the program revision process. Instead, the revised program states as a planning assumption that “[r]estoration of anadromous fish into areas blocked by dams should be actively pursued where feasible,” with a corresponding biological objective. The Council believes stating the program’s reintroduction objective in a more exploratory fashion is consistent with the magnitude of the proposal and with the Council’s process for revising the program, in which specific objectives and measures are adopted only after more detailed consideration of the biological and other issues at the finer geographic scale and of the power supply effects.

The revised program is consistent with Washington’s recommendation regarding the recovery of listed species. A central element of the revised program’s vision is that implementation of the fish and wildlife program will result in ecosystem conditions that allow for the recovery of the fish and wildlife affected by the operation of the hydrosystem and listed under the Endangered Species Act. Other sections of the program (e.g., subbasin planning) describe how the program intends to integrate ESA planning and implementation into the program’s broader mitigation effort.

With regard to the resident fish goals or objectives, the biological objectives in the revised program contain most of the elements of these recommendations, including objectives for (1) completing resident fish loss assessments; (2) mitigating for resident fish losses where these fish have been reduced in number or extirpated due to hydropower impacts; (3) the equivalent of full mitigation for hydropower losses over the long-term; (4) the substitution of resident fish for the loss of anadromous fish in blocked

areas; (5) obtaining these improvements in fish populations by maintaining and restoring functioning ecosystems and watersheds wherever possible; (6) restoring native resident fish species throughout their historic ranges where habitats exist and where habitats can be feasibly restored; and (7) increased opportunities for resident fisheries. Section III.C.2.a.2 and .3. The program's vision, planning assumptions, biological objectives for environmental conditions and habitat strategies all emphasize, consistent with these recommendations, addressing habitat problems as the key to achieving the desired biological performance of resident fish -- rebuilding healthy, naturally producing fish and wildlife populations by protecting, mitigating, and restoring habitats and the biological systems within them. In those places where this is not feasible, other methods that are compatible with naturally reproducing fish and wildlife populations will be used. Where impacts have irrevocably changed the ecosystem, the program will protect and enhance the habitat and species assemblages compatible with the altered ecosystem.

One apparent but not substantive difference between the recommendations and the revised program is that the program does not contain a separately stated objective or strategy concerning *resident fish* populations that have been extirpated. (The program does explicitly call for substitution of resident fish in areas where *anadromous fish* have been extirpated and it is not feasible at this time to reintroduce and recover them.) Mitigation for extirpated resident fish is but one aspect of a general requirement for resident fish mitigation. In other words, the resident fish losses resulting from the development and operation of the hydrosystem that require mitigation include extirpated as well as damaged populations; what is the appropriate mitigation in any particular instance will depend on the specific conditions identified during subbasin planning, guided by the revised program's mitigation objectives and strategies.

With regard to the wildlife goals/objectives, the revised program's biological objectives (Sections III.C.2.a.4, III.C.2.b and Appendix D) and wildlife strategies (Section III.D.7) call for habitat acquisitions and enhancement projects to achieve and sustain the habitat necessary to fully mitigate for wildlife losses caused by construction and operation of the hydrosystem. The program did not adopt the recommendation to "[s]uccessfully reintroduce wildlife species throughout their historic range." The Council considered this too open-ended an objective to be consistent with the Power Act's mitigation obligation. Construction and operation of the hydrosystem may have little to do with the disappearance of many wildlife species in the northwest. The issue of whether any specific reintroduction is necessary or appropriate to mitigate for hydrosystem losses is better addressed in specific planning at the subbasin level.

With regard to Montana's particular recommendations, the resident fish and wildlife sections at the program or basin level of the revised program do not refer explicitly to mitigation at Hungry Horse and Libby. The program at this level is not intended to be so specific, stating only general objectives, strategies and implementation guidance to apply across the basin. Nothing in this stage of the program revision process is intended to specify or call a halt to the on-going fish and wildlife mitigation related to these two hydroprojects. Specific mitigation objectives and strategies should be reviewed and continued or modified as appropriate during the subbasin planning phase.

Source: National Marine Fisheries Service
Recommendation No. 54

Recommendation: The National Marine Fisheries Service noted that the proposed program in the Strawman is quite similar to the goals stated in the draft "All H" paper for the Columbia River issued nine federal agencies that comprise the Federal Caucus. However, the Strawman proposed vision included the statement that the vision for the program "substantially preserves the hydroelectric potential

of the Columbia River within the constraints imposed by the obligation to protect, mitigate and enhance fish and wildlife as affected by the hydroelectric system.” The Fisheries Service could not comment at this stage whether this is an appropriate statement for the vision, given that the future of the river’s hydroelectric configuration is at issue in the Fisheries Service’s Federal Columbia River Power System Biological Opinion due out in draft later in 2000.

Finding: The vision in the revised program does not include the statement from the Strawman’s proposed vision that concerned the Fisheries Service. The program’s vision does provide that actions taken under this program must be consistent with maintaining an adequate, efficient, economical and reliable electrical power supply, consistent with the Power Act. And, the program’s planning assumptions include the assumption that for the purpose of planning for this fish and wildlife program the Council assumes, in the near term, that the breaching of the four federal dams on the lower Snake River will not occur. Section III.A.2. The draft planning documents from the federal agencies did not cast doubt on this assumption.

Source: Bonneville Power Administration
Recommendation No. 37

Recommendation: Bonneville recommended for the vision: “To balance on the one hand the protection, mitigation, and enhancement of fish and wildlife and the recovery of listed species, while on the other hand ensuring the region an adequate, efficient, economical, and reliable electric power supply.”

Bonneville commented that the proposed vision statement in the Strawman ignored the rich and vibrant though not necessarily native fish and wildlife abundance the basin enjoys currently. If the Council’s goal is native fish and wildlife in native habitats, the program should so state and there should be a call for agencies and tribes to recommend measures that will reduce the non-native species in the basin and increase the native species. Also, while ensuring that fish and wildlife contribute to the economic, social, and cultural well being of the basin may be an appropriate goal to some extent, the program should acknowledge that the burden of achieving this goal cannot fall solely upon Bonneville. Bonneville lacks the statutory authority to pursue such a goal.

Bonneville also recommended that the vision and the program as a whole need to address explicitly the dilemma created by the conflicting statutory mandates imposed on the management and use of the Columbia River Basin. When the dams were authorized, Congress was fully aware of the impact expected on fish and wildlife based upon the scientific knowledge and understanding of the affected species at that time. Since then, new mandates such as the Endangered Species Act and the Clean Water Act have been enacted. The program needs to squarely address its limitations: It cannot, by law, undo the power developments of the past, but it must aid in the recovery and avoidance of jeopardy of listed species.

Finding: The revised program is consistent with this recommendation. The vision and objectives recognize that the Power Act provides a particular scope for the program and for Bonneville’s mitigation obligations -- to mitigate for the adverse effects on fish and wildlife resulting from the development and operation of the hydrosystem. As one part of that mitigation obligation, the program envisions achieving environmental conditions that allow for the recovery of the fish and wildlife listed under the Endangered Species Act and affected by the operation of the hydrosystem. That is not the same as holding the power system and Bonneville responsible for addressing all impacts on fish and wildlife in the basin and all environmental degradation adverse to fish and wildlife. The program also envisions that actions undertaken to achieve mitigation and assist in recovery must be consistent with maintaining an

adequate, efficient, economical and reliable electrical power supply in the region. The program does not call for the undoing of the region's power system, which include a substantial contribution from hydroelectric dams.

The program takes a different approach to native species than suggested by the recommendation. The revised program focuses more on habitat considerations than on particular species, native or non-native. It calls for protecting and rebuilding healthy, naturally producing fish and wildlife populations by protecting, mitigating, and restoring habitats and the biological systems within them. The program recognizes that even in degraded or altered environments, native species in native habitats provide the best starting point and direction for achieving the type and extent of biological conditions and performance desired under the program, *see* Section III.D.3. Where a species native to a particular habitat cannot be restored, then another species native to the Columbia River Basin should be used if possible, and any proposal to produce or release non-native species must overcome the strong presumption in favor of native species and habitats and be designed to avoid adverse impacts on native species. Sections III.A.1 (vision), III.A.2 (planning assumptions), III.C.2 (biological objectives), III.D.3 (habitat strategies). In a program and a basin as large as this, with many different conditions and problems, there is room and need for both native and appropriate non-native species mitigation initiatives. The Council finds that the program's approach is based on the best available scientific knowledge and consistent with the recommendations and activities of the basin's fish and wildlife agencies and tribes.

Source: PNUCC
Recommendation No. 55

Recommendation: In PNUCC's view, the region's failure to articulate a clear and consistent vision is at the root of our salmon crisis. The recent listings of salmon and steelhead in the lower and upper Columbia River, the Snake River, the Oregon coast, in Puget Sound and in the upper Willamette River are dramatic indicators of the sorry state of affairs for what is called "salmon management." PNUCC criticized past programs for not providing a vision with clear biological goals that could successfully guide decisions about funding proposed measures. This lack of vision makes it impossible to develop a decision-making framework to guide resource management decisions so that there is steady progress toward recovery goals. Without a clear vision of what the program is to accomplish, and a scientifically-based framework to guide the complex tradeoffs needed to make rational resource allocation decisions, the region will continue to waste valuable time, talent and money.

PNUCC recommended that the Council help the region by clearly articulating a vision for the program showing how our environmental stewardship responsibilities and the regional economy can work together to achieve the often-competing goals for the river. National environmental policy is ever changing and has most recently been articulated in laws such as the Endangered Species Act and the Clean Water Act, among others. The region must develop a new vision that recognizes the environmental values articulated in the Endangered Species Act while continuing to achieve the goals of harvesting salmon, irrigating crops, navigating the rivers, controlling floods and producing power. The Council can be instrumental in creating a new, shared regional vision and in helping define the relationship between the region's environmental and economic goals.

PNUCC noted that the proposed vision in the Strawman left too much to be defined and did little to help resolve conflicts among different goals that people are trying to achieve at the same time. For example, many people are unwilling to continue to pursue the conflicting goals of growing more fish in hatcheries to support a harvest policy that then exerts undue pressure on naturally spawning populations protected under the ESA. PNUCC recommended the Council redraft the vision to be clear and consistent

about what the Council expects to achieve and which goals are most important. PNUCC suggested the following as an example of a vision statement to illustrate what it believed were the key concepts:

This vision provides, as a first priority, ecological and fisheries management conditions that prevent extinction of species listed under the Endangered Species Act. The vision of the program is therefore a Columbia River ecosystem that sustains an abundant, productive and diverse biological community where all of the current ESA listings have recovered. The vision also maintains an adequate, efficient, economical and reliable electrical power supply by substantially preserving the hydroelectric potential of the Columbia River. Through increased biological productivity and artificial production the abundance of certain fish species will increase to provide for continued tribal, commercial, and sport harvest. However, these harvest objectives will only be achieved by preventing interference with the goals of securing recovery, sustainability, and diversity for naturally spawning populations. This will require reforming current harvest management policies and practices to move toward selective harvest. The accomplishment of this vision will provide a more diverse and resilient ecosystem that is able to sustain its characteristics in the face of environmental variation.

PNUCC presented this example not to convince the Council it was the only true vision, but rather to illustrate the elements that should be expressed in a clear and consistent statement of goals. This example vision identifies coequal goals of delisting the currently listed populations while maintaining a reliable power system that relies on substantial hydropower production. This does not say that hydropower production will not be changed, but would indicate that the Council's vision is that the program can protect weak populations and maintain a reliable power system. The vision identifies the possible conflicts between historical harvest objectives and the goal of recovering currently listed populations and establishes as the highest priority the recovery goal.

PNUCC also recommended that the Council create a regional strategy for reforming environmental and economic laws and policies to comport with the vision and allow the region's resource managers to implement the program within the context of consistent statutory directives. The new regional vision could lead to a rearrangement of our environmental and economic policies and statutory directives to bring about, where feasible, a restoration of our fish and wildlife resources while maintaining the reliability of the hydropower system and continuing to support some degree of harvest. The Council must identify and articulate a complete list of inconsistent policy directives before the region can begin to resolve the conflicts that prevent a rational fish and wildlife program from being created and implemented. For example, marine mammal and migratory bird populations and laws and policies that protect them must be balanced with efforts to recover weak naturally spawning salmon and steelhead populations where marine mammal and bird predation is a documented problem. Statutory changes will need to be implemented at both the federal and state levels, and the Council's policy leadership can help the region's political leaders implement the necessary changes in statutes to align them with the vision. The following is a brief list of statutes and treaties PNUCC believed contain inconsistent policies:

- Endangered Species Act
- Migratory Bird Act
- Marine Mammal Protection Act
- Clean Water Act
- Mitchell Act for hatcheries
- resident fish management policies and regulations
- treaties with Native Americans
- treaties with Canada (regarding ocean harvest and the Columbia River)

Finding: The Council accepted many of the concepts underlying this recommendation, while not accepting others. The Council believes the revised program's vision states the important long-term goals for the program and the region and the key changes necessary to achieve those goals.

To the extent PNUCC's example vision should be considered a recommendation that the Council must respond to, the revised program differs from PNUCC's example vision in one obvious way. PNUCC emphasized two co-equal goals, one concerning fish and wildlife and the other concerning the power supply -- delisting fish and wildlife populations as the highest fish and wildlife goal while maintaining a reliable power system that continues to rely on substantial hydropower production. Providing harvest opportunities and other fish and wildlife benefits were considered of subsidiary importance.

The vision the Council adopted agrees that protecting the region's power supply must be central to the program's vision; it is a statutory obligation. But the Council declined to adopt a fish and wildlife priority of delisting populations. The Council is not free to limit the program's fish and wildlife vision in such a fashion, nor does it believe that would be the best policy for the region. The Council's obligation under the Power Act, which is what the Council expressed in the program's vision, extends beyond efforts to recover listed species alone to an obligation to protect and mitigate across the basin for the effects of the hydrosystem on fish and wildlife, whether those populations are listed or not. As established in the purposes of the Act, and reflected in many of the recommendations and, subsequently, in the program's vision, the significant importance of these fish and wildlife to the social, cultural and economic well-being of the whole region, implicates a range of goals and values well beyond the recovery level of listed fish. A program that did not envision providing a broad array of the benefits from fish and wildlife valued by the people of the region, including abundant opportunities for harvest, as a priority equal to delisting listed species would not be consistent with the recommendations, consistent with the Power Act, or worth pursuing.

The Council does not believe that recovery of listed fish and providing opportunities for harvest must necessarily be inconsistent, conflicting or hierarchically-ordered goals, especially in a long-term vision. The central principle in a habitat-based program is that the region will not be able to rebuild and sustain abundant, productive and diverse populations of salmon and other fish and wildlife unless it protects and restores the natural ecological functions and habitats on which these species depend. If the region is willing to make the effort to protect, rehabilitate and connect critical habitats and ecological functions, then, the Council believes, the benefits will include the recovery of listed species, sustained increases in natural production of listed and non-listed populations, and significant harvest opportunities.

PNUCC bases its recommendation, as indicated in supporting comments, in part on the fact that the way different statutory mandates on the river have been *implemented* to date has produced conflicting and even absurd results at times. For example, the ways in which we implement artificial production and ESA requirements has led to large returns of fish artificially produced for harvest that could be neither harvested nor allowed to spawn because of the possible adverse impacts on listed wild fish. This situation did not happen, however, simply because there are different legal mandates. For the short term, the Council has included implementation strategies in the artificial production and harvest sections to assist the region in resolving this problem, discussed in the findings related to production and harvest strategies. For the reasons discussed in the paragraph above, a sustained initiative to repair and extend important habitats and, thus, the populations dependent on them, would be the long-term solution for this problem.

The Council also rejected the recommendation that it support reform of the legal mandates governing the region's fish and wildlife efforts, and the corresponding idea that these mandates are necessarily irreconcilable or of different priority. Instead, the Council intends to help the region implement the various legal mandates, which speak to different but equally important values, in a more

consistent fashion. The Council believes that a consistent program of actions to protect and rehabilitate habitats and key ecological functions can help integrate and satisfy the different legal mandates and will, over the long term, both allow for the recovery of listed species and provide significant opportunities for harvest and other benefits.

To the extent the Council did not accept aspects of this recommendation, the Council finds that the recommendation would be less effective than what the Council adopted in the protection, mitigation and enhancement of anadromous fish, resident fish and wildlife, Northwest Power Act §4(h)(7)(C), and that the recommendation does not complement the activities and recommendations of the region's fish and wildlife agencies and tribes as well as what the Council adopted, Northwest Power Act §4(h)(6)(A), (7)(B).

Source: Public Power Council
Recommendation No. 52

Recommendation: The Public Power Council recommended the following vision and associated goals and general objectives:

Vision

- Through positive and mutually respectful actions, people and interest groups have come to general agreement on how they relate to and interact with the environment in the Pacific Northwest.
- The environment in the Pacific Northwest is healthy and clean.
- The economy in the Pacific Northwest is healthy and sustainable.
- Columbia River Basin fish and wildlife populations are stable and thriving.

Goal/Mission

Create the best possible balance between biological integrity, genetic diversity and sustainability of naturally-producing fish and wildlife populations of the Columbia River Basin, with appropriate consideration and respect for economic, cultural, social, political and legal constraints and realities. To the extent that strategies and actions result in significant impacts on sectors of society or the economy, a fundamental goal is to provide mitigation for those who would be disadvantaged.

The Public Power Council further envisions cost-effective generation of electricity in an environmentally responsible manner, including considerations of both air and water quality. The Federal Columbia River Power System remains in place, but with further improvements that result in minimal interference with anadromous fish passage in both directions. One such improvement would be a combination of measures designed to produce effective surface passage for juveniles without reliance on spill, in an attempt to achieve increased power generation, improved adult passage, and reduced nitrogen supersaturation.

The program should clarify why the region wants fish and wildlife populations, recognizing and respecting the fact that there are different and conflicting reasons why people want healthy fish and wildlife populations. There should be distinct and separable goals, objectives, strategies and measures where necessary to achieve separate outcomes. A continued failure to distinguish between uses and their corresponding goals is likely to doom the program to failure, no matter what measures are taken or how much money is spent. The overall strategy for managing anadromous and resident fish and wildlife in the Columbia Basin needs to examine whether we have sufficiently separate management systems to achieve disparate goals and objectives. In other words, would we be more likely to achieve success in meeting

environmental, economic, ESA, treaty, sportfishing (and hunting) and commercial goals and objectives if we had a variety of approaches and programs?

Fish and Wildlife Objectives, in order of priority:

1. Protect and enhance naturally spawning Columbia Basin fish and wildlife populations. This includes all salmonids and wildlife native to the Columbia Basin.
2. Honor tribal rights, including treaty fishing rights, to catch fish for ceremonial and subsistence purposes.
3. Sustain viable sport fisheries.
4. Sustain a viable commercial fishery.

Healthy Environment

- Protect the Columbia Basin and global ecosystems from environmental degradation.
- View environmental actions from a global perspective. Include environmental trade-offs in decisionmaking.

Economic and Social Vitality

- Ensure that the economic vitality of the region is protected.
- Balance biological, economic and social values to create the greatest benefit to the natural resource and region.
- Consolidate regional financial resources to optimize fish and wildlife benefits.

The Public Power Council also recommended a set of general environmental and social-economic “strategies” similar to the objectives and raising similar issues:

General Environmental Strategies

- View environmental actions from a global perspective.
- Recognize and ascertain the environmental trade-offs (e.g., if dams are removed, how would energy be produced and with what environmental costs?).

General Economic and Social Strategies

- Actions that are the least expensive but do the greatest good will be selected first.
- Actions will be judged on their ability to produce fish, reduce conflict and probability of success versus their cost.
- If savings can be found in existing management actions, the savings will be applied to the most critical fish and wildlife activities.
- When two actions can potentially produce equal fish and wildlife benefits, the action that will cause the least social-economic disruption will be selected.
- Coordinate regional fish and wildlife activities to reduce costs and create efficiencies.
- Provide adequate mitigation compensation for affected parties.
- Recognize and respect existing social-economic structures and search for solutions that minimize impacts.
- Establish performance goals and end-points to clarify expectations and to clarify what success will look like. Those who feel they are paying should have a clear idea of how much is enough.

Finding: The Council accepted much of the substance of the Public Power Council’s recommendation, especially about goals and objectives for environmental and habitat conditions and for biological performance related to those conditions, although the Council expressed these points in a different way. The Council did not adopt certain elements, as follows: For the reasons stated immediately above, in rejecting a similar recommendation from PNUCC, the Council did not adopt the

recommendation to place a higher priority on protecting and enhancing naturally spawning populations than on providing harvest opportunities. The program's vision establishes long-term goals, and in the long term the Council believes it is possible and appropriate to have the goals both of enhanced naturally spawning populations and increased harvest opportunities. Real success in protecting and restoring the natural ecological functions and habitats of the Columbia River basin should mean having abundant, productive, and diverse communities of naturally spawning populations that provide the harvest opportunities.

The Council agrees that the region needs to be more consistent in the near term in coordinating production and harvest management and the protection and enhancement of naturally spawning populations. The revised program contains provisions to that end, largely in the planning assumptions and habitat, artificial production and harvest strategies.

The Council agrees with the principles, objectives and general strategies on social and economic vitality and for a healthy environment recommended by the Public Power Council. Nothing in the program is intended to be inconsistent with these principles. A number of them are either restatements of obligations the Council has under the Power Act (such as cost-effectiveness considerations in selecting program measures and recommending projects for funding) or statements basic to the framework concept (e.g., establish performance objectives; coordinate mitigation activities for greater efficiency), and on that basis are part of the program.

The Council decided, however, not to make the recommended general social-economic principles part of the program or adopt any broad statement of social-economic principles, for reasons stated in detail in the findings below responding to the recommendations from the Idaho Waters Users. One of the Council's aims in revising the program was to make all parts of the program more functional and less aspirational than in the past. The Council did not find that a broad statement of social-economic principles (as opposed to specific measures to ensure the region's power supply, for example) would serve any specific function in the implementation of the program.

Source: Public Utility District No. 1 of Chelan County
Recommendation No. 4

Recommendation: The Public Utility District No. 1 of Chelan County recommended that any objective to "expand habitat and ecosystem functions well above the recovery level" should be limited to the management of species listed under the Endangered Species Act. Moreover, because it is not realistic to expect that management will be able to achieve conditions "well above" the recovery level, the program really should focus on management that will lead to the recovery and de-listing of the listed species.

Finding: This recommendation responded to language in the proposed vision in the Strawman that the Council did not include in the vision in the revised program. The program is not consistent with this recommendation, however, in that the Council did not adopt the recommended focus on recovery and de-listing of listed species. The Council's obligation under the Northwest Power Act is to protect, mitigate and enhance all fish and wildlife affected by the hydrosystem, not just the species listed under the Endangered Species Act and not just mitigation to the extent of de-listing. This broader obligation is reflected in the revised program's vision.

Source: Idaho Water Users
Recommendation No. 18

Recommendation: The Idaho Water Users recommended that the program include a balance of ecological and economic elements at all levels of the program, from the basin-wide vision to the subbasin plans. Also, the vision should express an intent to “enhance” rather than “restore” (the term used in the Council’s Strawman) the abundance, productivity, and diversity of biological communities and habitats in the basin. Thus the Water Users recommended the following for the program’s vision, revised from the version proposed in the Strawman):

The vision of the program is a Columbia River ecosystem that enhances the abundance, productivity and diversity of biological communities and habitats that have historically contributed to the environmental, social, cultural, and economic well being of the Columbia River Basin. The vision also includes an adequate, efficient, economical and reliable electrical power supply for the region. This substantially preserves the hydroelectric potential of the Columbia River within the constraints imposed by the obligation to protect, mitigate and enhance fish and wildlife as affected by the hydroelectric system. It provides ecological conditions that recover species listed under the Endangered Species Act and biological abundance and productivity to support tribal harvest guaranteed by law and treaty. This vision requires enhancement of ecosystem functions and habitats that have been altered or lost due to the development and operation of the Federal Columbia River Power System. The ecosystem needs to be more ecologically resilient and able to maintain its characteristics in the face of environmental variation.

The Water Users noted that the goal statement in the existing program is not appropriate as a vision statement for the recommended program, because it includes only biological objectives and not broader ecological and economic goals. The Water Users then recommended that the program include a statement on human effects and social-economic impacts at the same level of detail as the scientific foundation and specifically include the following principles:

- Social and economic impacts will be minimized.
- Strategies, policies and projects will be subjected to an evaluation of cost-effectiveness relative to other options in order to assess the incremental biological benefit for a given cost.

The Water Users recommended that the “normative river” concept, to the extent it is relevant, be confined to critical habitat for listed anadromous species and the resources under the control of the Federal Columbia River Power System. The FCRPS does not include the mainstem Snake River or any of its tributaries upstream from Lower Granite Reservoir. Moreover, while the concept of a more normal river is appealing in the abstract, it does not reflect the complex reality of the Columbia River system. For the most part, management actions aimed at “normative river conditions” will not have a significant effect on the hydrology of the existing system and are really just another set of management alternatives that should be evaluated against the standards of biological effectiveness and cost effectiveness, just like less “natural” options such as fish transportation improvements.

Finding: The Council accepted many of the principles underlying this recommendation, but did not accept others, as follows:

Vision statement. Elements of the recommendation’s vision statement can be found in the revised program, mostly in the program’s vision, although in different words. For example:

- The recommended vision is “a Columbia River ecosystem that enhances the abundance, productivity and diversity of biological communities and habitats that have historically contributed to the environmental, social, cultural, and economic well being of the Columbia River Basin.” The program envisions a Columbia River ecosystem that sustains an abundant,

productive, and diverse community of fish and wildlife providing the benefits from fish and wildlife valued by the people of the region.

- The recommended vision “requires enhancement of ecosystem functions and habitats that have been altered or lost due to the development and operation of the Federal Columbia River Power System.” The program states that the vision will be accomplished wherever feasible by protecting and restoring the natural ecological functions, habitats, and biological diversity of the Columbia River Basin. The Council does not consider the difference between “enhance” and “restore” to be substantive in this instance -- both connote improving the habitats and ecological functions necessary to sustain an abundant, productive and diverse community of fish and wildlife. The desired end point at a programmatic level for either “enhancing” or “restoring” ecological conditions is the ability of the system to sustain abundant, diverse populations that represent mitigation for the losses sustained by fish and wildlife due to the development and operation of the hydrosystem, not restoration to some indeterminate pre-development historical condition.
- The recommended vision “provides ecological conditions that recover species listed under the Endangered Species Act and biological abundance and productivity to support tribal harvest guaranteed by law and treaty.” The program envisions an ecosystem that provides abundant opportunities for tribal trust and treaty right harvest and for non-tribal harvest and conditions that allow for the recovery of the fish and wildlife affected by the operation of the hydrosystem and listed under the Endangered Species Act.
- The recommended vision provides that “the ecosystem needs to be more ecologically resilient and able to maintain its characteristics in the face of environmental variation. The program’s vision states that the ecosystem be able to “sustain” the environmental and population characteristics desired; the scientific principles in Section III.B.2 describe what this means in terms of resilience and maintenance in the face of environmental variation.
- The recommended vision “includes an adequate, efficient, economical and reliable electrical power supply for the region” and separately recommends that strategies, policies and projects be subjected to an evaluation of cost-effectiveness. The program envisions that actions taken under this program must be cost-effective and consistent with an adequate, efficient, economical and reliable electrical power supply.
- The recommended vision “substantially preserves the hydroelectric potential of the Columbia River within the constraints imposed by the obligation to protect, mitigate and enhance fish and wildlife as affected by the hydroelectric system.” The program’s vision did not include this explicit statement, but there is nothing in the revised program in which the Council calls for anything other than substantially preserving the hydroelectric potential of the river. At this time, an adequate, efficient, economical and reliable power supply for the region must include the substantial contribution from hydroelectric dams. Moreover, the program does include the planning assumption that for the purpose of planning for this fish and wildlife program the Council assumes that the breaching of the four federal dams on the lower Snake River will not occur in the near term, Section III.A.2.

Human effects/social-economic impacts foundation. The Council did not include in the program a statement on human effects and social-economic impacts at the same level of detail as the scientific foundation. The need to include a scientific foundation in the program had become more and more pressing over the past few years. The Power Act has always required that the program to be based on the best available scientific knowledge, Northwest Power Act §4(h)(B). Then in 1995, in *Return to the River*, the Independent Science Group harshly criticized the program for not including an explicit statement of scientific principles that could explain whether and how the program’s choice of actions relate to its goals and objectives. Finally, the 1996 amendment to the Power Act (after the last set of program amendments) called for rigorous, on-going independent scientific review of the projects proposed for funding to

implement the program, §4(h)(10)(D), further indicating a need to understand and state explicitly the science underlying program measures and objectives. The Council began working with the region on the development of a scientific foundation shortly after the publication of *Return to the River*, culminating in the present adoption of the scientific principles and other aspects of the program framework. The scientific foundation is directly intended to help those who plan and implement the program meet the statutory tasks relating to scientific review.

A separate human effects foundation is not at the same stage of development. More important, nor is there a functional need for such a foundation based in a combination of statutory and procedural imperatives, as there is for the scientific foundation. The Northwest Power Act allows the Council to consider a relatively limited set of economic factors in revising or implementing the program, not a broad set of social-economic considerations. In adopting the program, the Council is limited to considering which of two alternative measures that would achieve the same sound biological objective costs less to implement, Northwest Power Act §4(h)(6)(C), and whether, at the conclusion of the fish and wildlife program amendment process, the program has caused the region to have something other than an “an adequate, efficient, economical, and reliable power supply,” §4(h)(5). Then, in reviewing projects proposed for funding, the Council must determine whether the projects employ cost-effective measures to achieve program objectives, §4(h)(10)(D).

To be a functional tool of the program, an economic foundation would have to be tailored closely to these relatively limited statutory responsibilities. Obviously, the Council has to be and is aware of the broader economic issues, impacts and laws associated with the program, and with fish and wildlife efforts in the basin generally, which will affect whether others are able to implement the program successfully. It is partly for that reason the Council established its Independent Economic Analysis Board. And the Council agrees with the Idaho Water Users that implementers should work to minimize the social and economic impacts of the changes envisioned in the revised program. But that is not the same as adopting as part of the program a broad statement of human effects and social-economic impacts. It is not clear that such a broad statement would have any practical effect, yet one point of the revision of the program framework is to make all parts of the program more functional and less aspirational than in the past.

With regard to the two types of economic considerations that are found in the Act, the Council did not consider them sufficiently similar to require or permit treatment together in a single foundational statement. First, with regard to the effect of the fish and wildlife program on the adequacy, efficiency, economics and reliability of the power supply, the Council analyzed this statutory requirement in some depth in the 1994 Fish and Wildlife Program, developing an approach to this issue that remains generally valid. See the 1994-95 Fish and Wildlife Program, Appendix C and Appendix F, F-53 to F-63. The revised program notes that the Council will analyze the power supply issue further as the Council completes the comprehensive revision of the program in subsequent amendment processes, especially when calling for recommendations for a more specific mainstem plan, Section III.D.6. That will be the time for reviewing how the Council approaches this issue and, if appropriate, adopting a statement of basic principles or foundation for the power supply aspect of the program.

The second type of economic issue the Council must consider, in both adopting and implementing the program, is cost-effectiveness. The Ninth Circuit, in *Northwest Resource Information Center v. Northwest Power Planning Council*, 35 F.3d 1371, 1393-95 (9th Cir. 1994), has provided necessary guidance regarding cost-effectiveness considerations used to develop the program. The cost-effectiveness determinations that must be made by the Council when reviewing projects for funding recommendations, as required by the 1996 amendment to the Act, has been addressed in the Council’s annual funding recommendations to Bonneville and by the Council’s Independent Economic Analysis Board. The IEAB and the Council have identified the program framework itself, and especially the development of specific, measurable biological objectives, as the critical factor needed for the Council to

able to conduct a rigorous, quantitative cost-effectiveness analysis of projects proposed for funding. The Council and IEAB also focused on identifying reforms in the project solicitation and review procedures to enhance the likelihood that projects selected will be the most cost effective. Various amendments just adopted to the program reflect these principles. The Council remains open to the possibility of adopting cost-effectiveness principles into the program in the future, if it receives appropriate, specific, functional recommendations that offer more guidance than a reiteration of the cost-effectiveness principle.

“Normative” river conditions. The Council did not use the “normative river” concept or term, as it is susceptible of many different interpretations. What the Council did adopt was a vision of rebuilding and sustaining an abundant, productive, and diverse community of fish and wildlife populations throughout the basin by means of protecting and restoring natural ecological functions, habitats and biological diversity wherever feasible. Methods other than rehabilitating natural functions, such as artificial production or transportation, may be used provided they are compatible with naturally reproducing fish and wildlife populations and applied in manner consistent with the central effort to protect and restore habitat and avoid adverse impacts to native fish and wildlife species. Thus the Council agrees that in each *specific* instance, all reasonable management alternatives should be evaluated against the program’s principles and the standards of biological effectiveness and cost effectiveness.

Geographical extent of the power system and the program’s mitigation obligation. The Water Users recommended that the program focus on the habitats and resources within the confines of the Federal Columbia River Power System, and that this federal system be understood not to include the mainstem Snake River or any of its tributaries upstream from Lower Granite Reservoir. This part of the recommendation may be founded on an incorrect premise. The Power Act directs the Council to develop a program to address fish and wildlife affected by all the hydroelectric facilities on the river, not just the federal facilities, and to treat the river as an integrated system tied together by the integrated operation of the federal and non-federal power facilities. Thus, the purpose of the Act is to protect, mitigate and enhance fish and wildlife, including related spawning grounds and habitat, of the Columbia and its tributaries, especially anadromous fish “which are dependent on suitable environmental conditions substantially obtainable from the management and operation of the Federal Columbia River Power System *and other power generating facilities on the Columbia River and its tributaries*, Northwest Power Act, §2(6). Section 4(h)(1)(A) then directs the Council to develop the program to protect, mitigate and enhance fish and wildlife, including related spawning grounds and habitat, with the understanding that “[b]ecause of the unique history, problems, and opportunities presented by the development and operation of hydroelectric facilities on the Columbia River and its tributaries, the program, to the greatest extent possible, shall be designed to deal with that river and its tributaries as a system.” Finally, the federal agencies with an obligation to take the Council’s program into account include those responsible for regulating non-Federal hydroelectric facilities, §4(h)(1)(A).

The hydroelectric facilities and the system of hydro operations that affect fish and wildlife in the basin extend up the Snake River above Lower Granite Dam. And so in general the program has to take into account fish and wildlife impacts associated with operations above Lower Granite, whether the impacts are felt above or below Lower Granite, just as the program has to be concerned with fish and wildlife impacts associated with operations in the lower river but felt above Lower Granite. The Water Users are obviously concerned that the program not extend its jurisdiction to require mitigation for the fish and wildlife impacts of *irrigation* activities in the upper Snake or to *require* changes in irrigation operations to address the fish and wildlife effects of the hydrosystem. The Council has always been clear about the extent of the program’s scope in this regard: To the extent the program identifies changes in water management that are needed in the Snake River to improve the survival and production of fish and wildlife affected by the hydrosystem (an issue of continuing controversy), then the federal agencies operating or regulating federal or non-federal hydroelectric facilities in the Snake River do have an obligation to take those recommended changes into account in deciding how to operate or regulate those

projects. Federal, state and private entities operating or regulating *irrigation* projects do not have the same obligation; any changes in those operations to benefit fish and wildlife *under the program* can come only through a willing seller/willing buyer basis or some other voluntary contractual arrangement allowed by the state, as part of off-site mitigation allowed under the program.

Source: Northwest Irrigation Utilities, Columbia-Snake River Irrigators Association, Eastern Oregon Irrigators Association
Recommendation No. 25

Recommendation: The Northwest Irrigation Utilities, Columbia-Snake River Irrigators Association and Eastern Oregon Irrigators Association recommended that the program include what they call the New Water Management Alternative. Specific details are summarized below, in the findings relating to hydrosystem operation strategies, but in essence the New Water Management Alternative calls for an end to spring flow augmentation and limits summer flow augmentation. Stored water not used for flow augmentation could be rededicated to power production, and the increase in power revenues used to fund watershed enhancement and other fish and wildlife projects. The irrigation interests stated that the proposed New Water Management Alternative had the broad social objective of reducing conflicts among interests and stakeholder groups. The program's emphasis should be on identifying projects and actions that will both enhance environmental benefits and offer economic incentives.

These irrigation interests stated further that in considering tribal interests within the political economy of salmon recovery, there should be recognition that tribal commercial fisheries represent a very limited solution to the need for tribal economic development, providing direct net benefits of a few million dollars annually at best. Other activities and ventures will be needed, and water management projects can open the door to new economic development options. On the other hand, tribal ceremonial and subsistence (and local retail) fisheries in Zone 6 can be maintained and perhaps enhanced. These are important concepts, because these fisheries are an empirical expression of protecting somewhat undefined tribal property rights, which could hold significant economic value. In considering tribal interests, economic stakeholders should view tribal fisheries as an impaired property right. This could prompt discussions about exploring opportunities for the tribes to participate in long-term economic development projects, such as new water management projects.

Finding: The Council did not adopt or reject the proposed New Water Management Alternative, deferring consideration of its specific provisions until the time when the Council will consider specific recommendations for a mainstem plan, including systemwide water management provisions. See Section III.D.6, VIII.1. The Council agrees with the broad social objectives recommended of reducing conflicts among interests wherever possible and identifying projects that both enhance environmental benefits and offer economic incentives. This may not always be possible, but it is a common sense aspiration for program implementation.

The irrigation interests did not include any specific recommendation to accompany the comments on the economic aspects of tribal fisheries. The Council notes only that while tribal *and* non-tribal fisheries have economic aspects, they also have social, cultural and spiritual aspects that must be taken into account and that usually render purely economic analyses insufficient.

Source: Sierra Club -- Columbia Basin Field Office
Recommendation Nos. 9, 27
Source: Save Our Wild Salmon
Recommendation No. 29

Recommendation: The Columbia Basin Field Office of the Sierra Club and the Save Our Wild Salmon coalition recommended that the program should (1) prevent any further extinctions of species or genetically differentiated subspecies of fish and wildlife; (2) recover anadromous and resident fish populations to sustainably harvestable numbers; (3) fully comply with all applicable federal laws and treaty obligations as well as state laws, state fish and wildlife programs, and tribal fish and wildlife programs; and (4) invest strategically in infrastructure to maintain or strengthen the regional and local economy. The program should focus aggressively on actions that protect and restore fish and wildlife populations to prevent any further Endangered Species Act listings of fish and wildlife in the Columbia basin and seek the delisting of already listed threatened and endangered fish and wildlife. These groups also recommended that the program call for corrective actions to address current water quality violations, including water quality problems at mainstem dams. Implement this program in the next five years to avoid further extinctions.

The Columbia Basin Field Office of the Sierra Club separately recommended that resolving the salmon crisis in the Columbia Basin boils down to four public policy goals: (1) save and recover the salmon, (2) partially remove the four lower Snake River dams, (3) protect and restore fish habitat, (4) preserve and strengthen the economy.

Finding: The revised program is largely consistent with these recommendations, with exceptions described below. The program's vision and overarching biological objectives (see Sections III.A.1 and III.C.1) include establishing ecosystem conditions that provide abundant opportunities for tribal trust and treaty right harvest and for non-tribal harvest and that allow for the recovery of the fish and wildlife affected by the operation of the hydrosystem and listed under the Endangered Species Act. More specific basinwide biological objectives call for halting the declining trends in salmon and steelhead populations above Bonneville Dam by 2005 and the restoration of the widest possible set of healthy naturally reproducing populations of salmon and steelhead by 2012, with similar if less specific objectives regarding resident fish. Sections III.C.1, III.C.2.a.1, .2 and .3. The revision of the program is not complete, of course, and the specific objectives and measures for achieving these broader objectives are still under development.

Regarding the water quality recommendation, the program's vision, planning assumptions and overarching biological objectives call generally for protecting and restoring the natural ecological functions, habitats, and biological diversity of the Columbia River Basin. This includes suitable water quality, one of the key habitat characteristics for fish. The provisional basinwide objectives for environmental conditions state that habitat restoration may be framed in the context of measured trends in water quality, call for systemwide water management to move toward more natural hydrographic patterns in terms of quantity and quality, and call for water temperatures in managed river reaches that more closely match naturally-occurring water temperature regimes, Section III.C.2.b and Appendix D. The program then calls for subbasin plans to integrate Clean Water Act requirements as fully as possible and to state what additional steps are needed to achieve compliance with Clean Water Act requirements, Section V.A.5. In the mainstem, the Council will consider specific objectives and measures relating to water quality for spawning, rearing and migrating juvenile and adult fish during the mainstem plan phase of the program revision process, *see* Section III.D.6, VIII.1.

The Council did not adopt or reject the recommendation to partially remove the four lower Snake dams. More detailed findings on this recommendation can be found below in the section on hydrosystem

strategies. Specific implementation measures, even as major as dam removal, were not the subject of this phase of the amendment process. Specific recommendations for hydrosystem operations and configuration will be the subject of a mainstem plan amendment process to take place in 2001. Sections III.D.6, VIII.1. However, for the purpose of planning for this fish and wildlife program, the Council assumed that, in the near term, the breaching of the four federal dams on the lower Snake River will not occur. Section III.A.2 (sixth planning assumption).

It is not clear what these groups intended by the recommendations to preserve and strengthen the economy and invest strategically in infrastructure *to maintain or strengthen the regional and local economy*. In a part of their recommendations concerning habitat strategies, these groups recommend “strategic investments in land purchases, etc. *to implement habitat restoration at the fastest possible rate.*” This recommendation is discussed in the findings related to habitat strategies below. It is not clear if the recommendation for investments to implement habitat restoration is related to the broader economic investment recommendation. If not, nothing else indicates what types of economic activities and infrastructure are intended. A general principle to invest in projects and infrastructure with the purpose of maintaining or strengthening local economies would be outside the scope of the program, limited as it is by the Power Act to objectives and measures to protect, mitigate and enhance fish and wildlife. At the same time, the Council believes that it is possible to implement the revised program and maintain a strong regional economy and healthy local economies. The Council cannot make a more specific judgment on this point until more specific objectives and measures are recommended in the planning phases to follow.

Finally, in the adoption of the revised program, the Council complied with all applicable federal state and tribal laws and treaty obligations. It expects those who implement the program to do the same. The Council did not include this point in the revised program, as compliance with the law is simply a basic, on-going obligation of the Council and everyone else.

Source: Bill Bosch
Recommendation No. 3

Recommendation: If people in the region want more fish, Mr. Bosch recommended that we need to let the river be more of a river, not a system of reservoirs. To continue down the road of the past 20 years, with any changes that pose any “risk” whatsoever to the region’s economy rejected out-of-hand, is a certain way to waste more money. All change involves risk, but change is an unalterable fact. The region needs leadership that harnesses our deep well of human creative energy and talent and challenges us all to embrace the transition from an economy dependent on an abused and declining river system to an economy that works in harmony with a natural river system. The program should recognize that the region can have healthy fish runs, a healthy river system, and a healthy economy.

Finding: To the extent this is a specific recommendation to remove dams, the Council did not adopt or reject the recommendation. Specific implementation measures, even as major as dam removal, were not the subject of this phase of the amendment process. Additional findings on dam removal recommendations can be found in the section on hydrosystem strategies below. Specific recommendations for hydrosystem operations and configuration will be the subject of a mainstem plan amendment process to take place in 2001. Sections III.D.6, VIII.1. However, for the purpose of planning for this fish and wildlife program, the Council assumed that, in the near term, the breaching of the four federal dams on the lower Snake River will not occur. Section III.A.2 (sixth planning assumption).

The revised program is consistent with the general principles underlying this recommendation. The program envisions a Columbia River ecosystem that sustains an abundant, productive, and diverse

community of fish and wildlife, to be accomplished wherever feasible by protecting and restoring the natural ecological functions, habitats, and biological diversity of the Columbia River Basin. One of the provisional biological objectives for environmental conditions consistent with this vision is to allow water to flow more than at present in the natural hydrographic pattern, in terms of quantity, quality and fluctuation, Section III.C.2.b and Appendix D -- that is, to reestablish to a certain extent river functions that have been lost through hydrosystem and other development. Scientific studies in recent years have emphasized this as a necessary step if the region is serious in sustaining abundant, productive, and diverse communities of the anadromous and resident fish most valued by the people of the region. Thus one of the planning assumptions the Council adopted states that “[m]ainstem hydrosystem operations and fish passage efforts should be directed at re-establishing natural river processes where feasible and consistent with the Council’s responsibility for maintaining an adequate, efficient, economical, and reliable power supply,” Section III.A.2.

As noted in the finding immediately above, the Council agrees with the recommendation that it is possible to implement the revised program and at the same time maintain a strong regional economy and healthy local economies. The Council cannot make a more specific judgment on this point until more specific objectives and measures are recommended in the planning phases to follow.

Source: Bill Williams
Recommendation No. 11

Recommendation: Mr. Williams recommended that the program assign the needs of the fish and wildlife of the Columbia River Basin, and especially the salmon and steelhead runs, a higher priority than they have been given in recent years, even if that costs people more for power, water, aluminum, transportation, and so forth. The region is capable of having strong sustainable fish runs and other wildlife benefits, while still wisely utilizing the water available in the Basin for many beneficial purposes. Mr. Williams recommend that the Council revise the statement of goals in the 1994-95 program to greatly shorten the time line -- the vision should be to stabilize, protect, and restore the runs, not by the year 2194, but by 2025. The goal in the existing program of doubling the runs is not an appropriate vision. Doubling the run of sockeye to Idaho will still not get them off the endangered species list. Instead, the program’s vision should be to restore runs to the 1940’s level, with all major fish runs on the Columbia removed from the endangered or threatened species lists.

Finding: The revised program is consistent with the basic principles expressed in this recommendation. The program envisions a sustained effort across the basin to protect and restore the natural ecological functions, habitats, and biological diversity of the Columbia River Basin, in order to achieve a Columbia River ecosystem that sustains an abundant, productive, and diverse community of fish and wildlife. The vision includes allowing for the recovery of fish and wildlife affected by the operation of the hydrosystem and listed under the Endangered Species Act. Pending further review in the subbasin assessment and planning process, the interim biological objectives of the program call for the restoration of the widest possible set of healthy, naturally reproducing populations of salmon and steelhead by 2012, and for an increase in the total adult salmon and steelhead runs above Bonneville Dam by 2025 to an average of 5 million annually in a manner that supports tribal and non-tribal harvest. The Council considers these to be objectives that, if achieved, would “stabilize, protect, and restore runs by 2025,” as recommended. These are ambitious objectives, given the history of the salmon and steelhead declines in abundance and diversity over the last century, and so represent the latest step in the region’s always evolving effort to find the appropriate balance among different uses and benefits of the river. The Council adopted these objectives in agreement with the recommendation that the region is capable of

having strong sustainable fish runs, and wildlife benefits represented by similar wildlife objectives, while still wisely utilizing the water available in the basin for many beneficial purposes.

Source: Jim Likes
Recommendation No. 2

Recommendation: Mr. Likes recommended reversing everything that humans have done to impinge on streams in order to save the salmon. Federal acts should be rewritten to give priority to the natural environment, including fish and wildlife resources, and to give much lower priority to the production of electricity, irrigation water and riverine transportation. Mr. Likes also recommended that the Council address the human population problem.

Finding: The revised program envisions a broad, habitat-based program that will result in ecosystem conditions that sustain an abundant, productive, and diverse community of fish and wildlife. This is to be accomplished wherever feasible by protecting and restoring the natural ecological functions, habitats, and biological diversity of the Columbia River Basin. The program is consistent with part of this recommendation in that in some instances it calls for reversing the effects of human degradation of streams and reconstructing the balance between developed uses of the river and its qualities for fish and wildlife. However, the recommendation also calls for program elements that are beyond the authority of the Council to adopt, in seeking to have the program address all human impacts on streams, pursue federal legislation, and address the human population. The Council is limited by the Power Act to addressing the effects on fish and wildlife that result from the development and operation of the hydrosystem, and to adopting objectives and measures that Bonneville and the other federal agencies can be expected to implement.

Source: Ferry County Board of Commissioners
Recommendation No. 7

Recommendation: The Ferry County Board of Commissioners recommended that the Council and all other agencies involved in the amendment process follow existing rules and laws regarding the economic impacts of the proposed amendments. The Council should consider first the well-being and livelihood of people who will be affected by the program, whether directly or indirectly, making every effort to protect the property rights, homes and jobs of people while caring for all aspects of the environment, including people's place in that environment.

Finding: The Council followed all applicable laws in adopting the revised program, and expects those implementing the program to do the same, including laws requiring consideration of economic impacts. The Power Act allows the Council to consider a relatively limited set of economic factors in adopting or revising the program -- deciding whether the fish and wildlife program has compromised the region's "adequate, efficient, economical, and reliable power supply," Northwest Power Act §4(h)(5) (*see* Appendix C and Appendix F, F-53 to F-63, to the 1994-95 Fish and Wildlife Program), and assessing which of two alternative measures that would achieve the same sound biological objective costs less to implement, §4(h)(6)(C).

At the same time, if the Council expects others to be able to implement the program successfully, the Council must be aware of the broader economic issues, impacts and laws associated with the program, and with fish and wildlife efforts in the basin generally. The Council believes that it is possible to

implement the revised program and maintain a strong regional economy and healthy local economies. The Council cannot make a more specific judgment on this point until more specific objectives and measures are recommended in the planning phases to follow. The Council has organized the program at several geographic levels, and calls for the most specific and detailed planning and implementation to take place at the subbasin level, with broad participation by affected interests and guided by the general basinwide principles just adopted. In this way, the Council intends to rely heavily for the specific details of the subbasin plans on the people in the watersheds who have a major stake in finding ways to protect and enhance environmental conditions for fish and wildlife while balancing and protecting the economic and social interests of their communities.

Source: Sidney Clouston
Recommendation No. 8

Recommendation: Mr. Clouston noted that the allocation of jurisdiction between the various federal agencies and the states allows for experimentation in governing and implementation, but recommended that in the aggregate, a unified vision needs to exist. He also recommended allowing for flexibility and the use of adaptive management in implementation, in combination with strict monitoring and evaluation. Stakeholders should be able to implement innovative projects to needs that are unique to their local areas.

Finding: The revised program is consistent with this recommendation. The program framework is intended to allow for flexibility in specific planning and implementation at local levels, guided by a not-too-extensive set of key objectives and standards for the program as a whole. Also, the program explicitly aims to be adaptive and experimental in implementation, with monitoring and evaluation efforts at every level, *see* planning assumptions, Section III.A.2, and monitoring and evaluation strategies, Section III.D.9. On the other hand, the Council constructed the program so that it can be a regional vehicle for coordinated or integrated federal/state planning and implementation for fish and wildlife in the basin, seeking environmental conditions that will allow for the recovery of species listed under the Endangered Species Act while also addressing and achieving the broader mitigation objectives of the Power Act.

3(a) (cont.) “Specific planning assumptions”

Source: Oregon Department of Fish and Wildlife
Recommendation No. 26

Recommendation: The Strawman released by the Council proposed a set of “planning assumptions” that would articulate the policy directions of the program under the vision. Oregon edited the assumptions in the Strawman and recommended the following policy judgments and planning assumptions for the program. For convenience in addressing this series of recommended assumptions, a finding follows each one. The revised program is largely consistent with Oregon’s recommendation, although some of the concepts were captured elsewhere than in the program’s specific planning assumptions in Section III.A.2. Almost all differences between the recommendation and the revised program are editorial, not substantive. Substantive differences only are noted.

- Successful protection, mitigation, and recovery efforts should involve a broad range of strategies for habitat protection and improvement, hydrosystem operations, artificial production, and harvest management. No single activity may be sufficient to recover and rebuild fish and wildlife species in the Columbia River Basin.

Finding: The Council accepted this recommendation. *See* the first planning assumption, Section III.A.2.

- The Bonneville Power Administration should make available sufficient funds to implement in a timely fashion the measures in the program.

Finding: The Council accepted this recommendation. *See* the second planning assumption, Section III.A.2.

- Efforts to improve the status of fish and wildlife populations in the basin should protect existing populations that are healthy and productive and their habitats.
- Efforts to improve the status of fish and wildlife populations in the basin should restore existing populations at risk of extinction and their habitats.

Finding: These Council incorporated the concepts underlying these two recommendations in various ways throughout the vision, Section III.A.1; the third planning assumption regarding a habitat-based program, Section III.A.2; the objectives for biological performance (calling for a halt to the decline in the near-term and a restoration of the widest possible set of healthy populations in the middle term), Section III.C.2.a; the first of the provisional basinwide objectives for environmental characteristics, Section III.C.2.b and Appendix D; and the habitat strategies, Section III.D.3.

The concept proposed in the Strawman of “building from strength” and focusing first on habitat that supports existing productive populations caused Oregon and others to be concerned that the Council might be inclined to give priority to protecting productive populations at the expense of weak populations at risk of extinction. That was not the intent, and is not the case in the revised program. Consistent with the recommendations of agencies and tribes and others, the program seeks to create the ecosystem conditions that both protect and expand healthy populations *and* allow for recovery of listed populations, as recognized first in the vision, Section III.A.1. Having both goals does not necessarily call for different core strategies. The best available scientific thinking on salmon recovery indicates, as expressed in the habitat strategies, that “building from strength” -- protecting and expanding and connecting from

relatively productive habitats -- can and should apply to weak populations as well as more productive populations. *See* the first of the habitat strategies, Section III.D.3, and the first of the provisional biological objectives for environmental characteristics, Section III.C.2.b and Appendix D.

- Restoration and mitigation efforts should focus on developing ecosystem conditions and functions that will allow for maintaining and improving biological diversity within and among species in order to sustain a system of robust populations. Increasing the abundance of individual populations may not, by itself, result in long-term recovery.

Finding: The Council adopted this recommendation as part of the second habitat strategy, Section III.D.3.

- Management actions should be taken in an adaptive, experimental manner because ecosystems are inherently variable and highly complex. This approach includes using experimental designs and techniques as part of management actions, and integrating research and evaluation with those management actions to measure their effects on the ecosystem.

Finding: The Council accepted this recommendation. *See* the fourth planning assumption, Section III.A.2.

- Actions to protect, mitigate, and restore fish and wildlife should protect biological diversity by benefiting the range of species, stocks, and life-history types in the basin, and should favor solutions that best fit natural behavior patterns and ecological processes.

Finding: The Council accepted this recommendation, but applied the principle specifically to considerations of juvenile and adult fish passage at the mainstem dams. *See* the fifth planning assumption, Section III.A.2. Oregon recommended applying the principle broadly across the spectrum of actions that will implement the program. The Council does not disagree that the principle may have general application. But, the principle first emerged out of the Council's review, with the ISAB's assistance, of the Corps of Engineers' juvenile fish mitigation program, with specific scientific review of its application to the mainstem passage issues. For this reason, the Council believed that the program should continue to emphasize the relation of this principle to mainstem dam passage.

- Actions to protect, mitigate, and restore fish and wildlife should meet the needs of all species and communities.

Finding: The revised program does not contain this statement, but the Council incorporated the concept throughout the revised program. The program as a whole envisions a multi-species effort, focused not just on listed populations, but on mitigating across the basin for the adverse effects to fish and wildlife caused by the development and operation of the hydrosystem and providing the benefits from fish and wildlife valued by the people of the region, Section III.A.1; *see also* the provisional biological objectives for environmental characteristics, which describe environmental conditions conducive to a multi-species program, Section III.C.2.b and Appendix D. Thus the planning assumption on water management and the hydrosystem strategies focus in particular on ensuring that actions taken to benefit fish balance the needs of resident fish with those of anadromous fish and the needs of migrating fish with those of spawning and rearing fish, Sections III.A.2, III.D.6.

- Actions to protect, mitigate, and restore fish and wildlife should meet obligations to provide fish and wildlife mitigation where habitat has been permanently lost due to development.

Finding: The Council incorporated this recommendation as part of the tenth planning assumption, Section III.A.2.

- Artificial production should be consistent with the guidelines provided by the policy and scientific framework, and should be adaptive in design to evaluate benefits, address scientific uncertainties, and improve survival of artificially produced fish, while minimizing the impact on, and if possible benefiting, fish that spawn naturally.

Finding: The Council accepted this recommendation and incorporated most of it as part of the eleventh planning assumption, Section III.A.2. The statement that artificial production should be consistent with the guidelines provided by the policy and scientific framework is not expressly stated in the planning assumption, but it is implicit in that all strategies in the program should be implemented consistent with the program's policy and scientific framework. The artificial production strategies, Section III.D.4, provide more detail.

- Actions to protect, mitigate, and restore fish and wildlife should ensure the good health of native species in native habitats. Actions to produce or release non-native species, including resident fish substitution programs, should be designed to avoid adverse impacts on native species.

Finding: The recommended assumption concerning native species is reflected in the habitat strategy on native species, Section III.D.3, and in the biological performance objectives relating to substitution, Section III.C.2.a.2.

- Harvest opportunities should be provided using sound biological management practices that protect and recover natural spawning populations. Harvest provides significant cultural and economic benefits to the region that should be preserved by the program.

Finding: The Council accepted this recommendation. *See* the twelfth planning assumption, Section III.A.2.

- Actions should be taken to develop and implement water quality standards that fully protect fish and wildlife populations. Total maximum daily loads (TMDLs) should be developed and plans implemented to improve the quality of degraded waters to support beneficial uses.

Finding: The revised program does not include the recommended assumption concerning the development and implementation of water quality standards such as total maximum daily loads (TMDLs). The Council concluded that this recommendation was too specific for the program at this phase in its revision. The revised program did include more general provisions relating to water quality, however, that are consistent with this recommendation. First, the program's vision, planning assumptions and overarching biological objectives call for protecting and restoring the natural ecological functions, habitats, and biological diversity of the Columbia River Basin. This includes suitable water quality, one of the key habitat characteristics for fish. The provisional basinwide objectives for environmental conditions state that habitat restoration may be framed in the context of measured trends in water quality, call for systemwide water management to move toward more natural hydrographic patterns in terms of quantity and quality, and call for water management practices that allow the water temperatures in managed river reaches to more closely match naturally-occurring water temperature regimes, Section III.C.2.b and Appendix D. The program then calls for subbasin plans to integrate Clean Water Act requirements as fully as possible and to state what additional steps are needed to achieve compliance with Clean Water Act requirements, Section V.A.5. In the mainstem, the Council will consider specific

objectives and measures relating to water quality for spawning, rearing and migrating juvenile and adult fish during the mainstem plan phase of the program revision process, *see* Section III.D.6, VIII.1.

- Actions in and above the estuary should be considered relative to their effects on the estuary and the plume. The estuary of the Columbia River, its nearshore discharge plume, and adjacent marine area are part of the Columbia River ecosystem and affect its fish and wildlife.

Finding: The recommended assumptions about the estuary are reflected most directly in the seventh of the provisional biological objectives for environmental conditions, Section III.C.2.b and Appendix D, and also in the habitat strategy regarding the estuary, Section III.D.3. The Council included the estuary as one of the ecological provinces that are subdivisions of the program for more specific objectives, *see* Section IV.A.

- Actions should provide a level of productivity and a range of biological diversity necessary for fish and wildlife to survive and prosper under the range of ocean conditions they face in their lifetime. Ocean conditions and regional climates play a large role in the survival of fish and wildlife in the Columbia River Basin.

Finding: The Council incorporated the concepts underlying this recommendation in various places in the program. The planning assumptions acknowledge that the effect of ocean habitat on salmonids needs to be considered in evaluating fresh water management. More to the point is the first strategy relating to ocean conditions, which recognizes that “[o]cean conditions and regional climates play a large role in the survival of anadromous fish and other species in the Columbia River Basin,” Section III.D.8. The other part of the recommendation is captured most in the eighth of the provisional biological objectives for environmental conditions, where the Council calls for actions that “[e]nhance the natural expression of biological diversity in salmon and steelhead populations to accommodate mortality and environmental variability in the ocean,” Section III.C.2.b and Appendix D.

- Actions should be taken to meet the Power Act obligation to mitigate fully the fish and wildlife impacts from hydropower development in the Columbia River Basin. In 1986, the Council estimated that an annual loss of 5-11 million adult salmon and steelhead could be attributed to hydropower development in the Columbia River (Section 4.1B of the 1994 Fish and Wildlife Program).

Finding: The Council reflected the recommended assumption concerning the Power Act mitigation obligation and the fish and wildlife losses caused by hydropower development in the vision, Section III.A.1, the basin-level objectives for biological performance, Section III.C.2.a, and the fourth habitat strategy, Section III.D.3.

- In deciding on actions to implement the program, the Council should adhere to the key principles of the Northwest Power Act as discussed in Section 1.2A of the 1994 program, including: (1) actions should complement the fish and wildlife managers’ programs and be consistent with the legal rights of the tribes; (2) they should be based on the best available scientific knowledge; (3) actions should provide suitable river flows “to improve production, migration, and survival of fish to meet sound biological objectives;” and (4) they should represent equitable treatment for fish and wildlife with the other uses the river serves.

Finding: The Council did not include a statement of legal principles from the Act. An intent to be consistent with the Act is implicit in the adoption and implementation of the program.

- Mainstem hydrosystem operations and fish passage efforts should be directed at re-establishing “normative conditions” as defined by the Independent Scientific Group including restoration of spring freshets, stabilization of daily fluctuations in flows, identification of critical habitats, and reconnection of restored habitats where remnant core populations exist.

Finding: The Council did not use the “normative river” concept or term, as it is susceptible of many different interpretations. Otherwise the revised program is largely consistent with this recommendation, as the Council incorporated many of the underlying substantive concepts in various parts of the program. The program envisions protecting and restoring the natural ecological functions, habitats, and biological diversity of the Columbia River Basin, Section III.A.1. Consistent with this vision, the planning assumptions state that “[m]ainstem hydrosystem operations and fish passage efforts should be directed at re-establishing natural river processes where feasible and consistent with the Council’s responsibility for maintaining an adequate, efficient, economical, and reliable power supply,” Section III.A.2. Also consistent with the vision, the third of the provisional biological objectives for environmental conditions is to allow water flows to follow the natural hydrographic pattern more closely than they do at present, in terms of quantity, quality and fluctuation. This includes allowing for seasonal fluctuation and stabilizing daily fluctuations. Section III.C.2.b and Appendix D. Finally, the importance of identifying, protecting, expanding, and connecting important mainstem habitats and supporting the key populations in that habitat is reflected in the first and second of the provisional biological objectives for environmental conditions, Section III.C.2.b and Appendix D; in the habitat strategies, Section III.D.3 (in the introductory text); in the mainstem habitat section of the hydrosystem strategies, Section III.D.6; and generally in the matrix and text linking biological objectives to strategies, Section III.D.2.

Source: Columbia River Inter-Tribal Fish Commission
Recommendation No.: 40

Recommendation: The Commission recommended the following set of assumptions for the program, editing and reacting to the policy assumptions proposed in the Strawman. For convenience in addressing this series of recommended assumptions, a finding follows each one. The revised program is largely consistent with the Commission’s recommendation, although some of the concepts were captured elsewhere than in the revised program’s planning assumptions. There are substantive differences, as noted.

- Recovery efforts should involve a combination of strategies for habitat improvement, hydrosystem reform, artificial production, and harvest management. The appropriate mix of recovery strategies depends largely on local conditions and the location of the population within the Columbia Basin. Populations in the lower river may be able to increase by using a single approach.

Finding: The first planning assumption incorporates the substance of this recommendation, except for the reference to the possibility of an increase by using a single approach, Section III.A.2. To further highlight that recovery efforts must involve a combination of strategies, the assumption emphasizes instead that “no single action is sufficient” to recover and rebuild fish and wildlife species. The Council agrees with the Commission that it might be possible for a single approach to result in an increase in a particular population. But Council intended this assumption to focus of the program as a whole, in which sustained rebuilding of the declining species across the river will require a variety of strategies and initiatives.

- Harmful land use practices and continuing habitat degradation can overwhelm attempts at habitat restoration and may so damage some areas that they cannot be restored at all. Habitat management should prevent further damage to riparian areas and focus restoration efforts on those populations in greatest danger of extirpation and which will benefit most from habitat improvements. The assumption in the Strawman that emphasized focusing first on protecting and expanding habitat that supports existing healthy populations would essentially remove habitat restoration as a tool for restoring populations listed under the Endangered Species Act. Coupled with the “no breaching” assumption (see below), this would make delisting populations dependent on harvest and hatchery actions, a logically untenable position that violates the first assumption.

Finding: The program incorporates in various places the concepts of protecting habitat from further degradation as well the restoration of degraded habitat. The concept proposed in the Strawman of “building from strength” and focusing first on habitat that supports existing productive populations caused the Commission (and others, *see, e.g.*, Oregon above and PNUCC below) to be concerned that the Council might be inclined to give priority to protecting habitat for productive populations at the expense of weak populations that are at risk of extinction. This was not the intent, and is not the case in the revised program, which does not include the criticized proposed planning assumption from the Strawman. Consistent with the recommendations, the program seeks to create ecosystem conditions that both protect and expand healthy populations *and* allow for recovery of listed populations, as recognized first in the vision, Section III.A.1.

Having both goals does not necessarily call for different approaches or different core strategies. The best available scientific thinking on salmon recovery indicates, as expressed in the habitat strategies, that “building from strength” -- protecting, expanding and connecting relatively productive habitats -- can and should apply to help improve and protect weak populations where possible as well as more productive populations. *See* the first of the habitat strategies, Section III.D.3, and the first of the provisional biological objectives for environmental characteristics, Section III.C.2.b and Appendix D.

The Council agrees with the Commission that preventing further habitat degradation and engaging in habitat restoration are keys for restoring populations listed under the Endangered Species Act. A habitat-based approach to mitigation and recovery is central to the revised program, reflected in various ways throughout the vision, Section III.A.1; the planning assumption regarding a habitat-based program, Section III.A.2; the objectives for biological performance (calling for a halt to the decline in the near-term and a restoration of the widest possible set of healthy populations in the middle term), Section III.C.2.a; the basin-wide objectives for environmental characteristics, Section III.C.2.b and Appendix D; and the habitat strategies, Section III.D.3. Actions under the program to help protect and restore the natural ecological functions, habitats, and biological diversity of the basin should include efforts to halt harmful land use practices and continuing habitat degradation that can overwhelm other attempts at habitat restoration.

To the extent the Commission recommended a reverse priority -- to give priority to restoration efforts that address those populations in greatest danger of extirpation -- the Council concluded that this approach would present as many problems as the proposed approach the Commission criticized. The Council decided not to adopt this part of the recommendation, and instead to focus efforts at habitat and other improvements that can protect and enhance both the weakest and the relatively more productive populations, as an approach that is more consistent with the Council’s broader mitigation obligation under the Power Act, with the recommendations, activities and comments of other agencies and tribes, and with the best available scientific knowledge about restoration of salmonids, and thus more effective in protecting, mitigating and enhancing fish and wildlife, Northwest Power Act §4(h)(6)(A), (7)(B) and (C).

The comment on the dam breaching assumption is addressed below, in response to a planning assumption directly focused on dam breaching.

- Recovery of populations depends on increasing both their productivity and abundance. Restoration efforts must focus on developing ecosystem conditions and functions that will allow for increased survival and for maintaining and improving the diversity within and among species in order to sustain a system of robust populations in the face of environmental variation.

Finding: This recommendation is largely incorporated in the second habitat strategy, Section III.D.3. Other sections of the program also incorporate the concepts, including specifically that of increasing both productivity and abundance of populations, *see* the vision, Section III.A.1; the planning assumption regarding a habitat-based program, Section III.A.2; the scientific principles, especially Principles 1,4 and 6, Section III.B.2; the description of the basin-level biological objectives that call for attention to characteristics of productivity, abundance and diversity, Section III.C.2; the basinwide objectives for biological performance, Section III.C.2.a; and the provisional objectives for environmental conditions, Section III.C.2.b and Appendix D.

- Actions to improve juvenile and adult fish passage through mainstem dams, including fish transportation actions, should protect biological diversity by benefiting the range of species, stocks and life-history types in the river, and should favor solutions that best fit natural behavior patterns and river processes. Natural river conditions should be the baseline against which to measure the effectiveness of other passage methods.

Finding: Adopted in the fifth planning assumption, Section III.A.2, and also in the habitat strategies, Section III.D.6.

- Creation of mainstem spawning, resting, and rearing habitat is essential to meet the vision, goals, and biological objectives. In addition, it is essential to reduce juvenile and adult salmon mortality associated with the hydroelectric system. Federal agencies should proceed with all steps necessary to modify the lower Snake River dams to natural river conditions and draw down John Day reservoir to spillway crest as quickly as possible. As part of these efforts, the region needs to develop mitigation and transition plans to reduce the adverse economic and social effects of actions necessary to restore Snake River salmon. Realizing it may take 5-10 years to accomplish all these modifications, managers must take other interim steps to protect the most endangered Snake River salmon populations.

Finding: The Council incorporated the recommendation regarding mainstem spawning and rearing habitat, reflected most generally in the program's vision to protect and restore the natural ecological functions, habitats, and biological diversity of the Columbia River Basin. Protection and creation of mainstem spawning, resting, and rearing habitat will be an important part in achieving this overall vision. The specific importance of identifying, protecting, expanding, and connecting important mainstem habitats and supporting the key populations in that habitat is reflected in the first and second of the provisional biological objectives for environmental conditions, Section III.C.2.b and Appendix D; in the habitat strategies, Section III.D.3 (in the introductory text); in the mainstem habitat section of the hydrosystem strategies, Section III.D.6; and generally in the matrix and text linking biological objectives to strategies, Section III.D.2. Consistent with the vision, objectives and strategies, one planning assumption states that "[m]ainstem hydrosystem operations and fish passage efforts should be directed at re-establishing natural river processes where feasible and consistent with the Council's responsibility for maintaining an adequate, efficient, economical, and reliable power supply," Section III.A.2.

The Council also accepted that part of the recommendation that the region needs to continue increasing juvenile and adult survival associated with the hydroelectricity system. See the planning assumption on passage, Section III.A.2, and the hydrosystem strategies, Section III.D.6.

The Council did not adopt the Commission's recommended planning assumption calling for the modification of the Snake River dams to natural river or the drawdown of the John Day dam to spillway crest. The Council did not adopt or reject any recommendation calling for the breaching or drawdown of specific dams. As major an event as dam removal would be, it is still a specific implementation measure, and specific implementation objectives and measures were not the subject of this phase of the amendment process. Specific objectives and measures for the mainstem will be the subject of a subsequent program amendment process, *see* Sections III.D.6, VIII.1. The Council is deferring consideration of all specific hydrosystem and mainstem measures until that more appropriate amendment phase, when they may be resubmitted in the same or modified form. However, for the purpose of planning for this fish and wildlife program, the Council assumed that, in the near term, the breaching of the four federal dams on the lower Snake River will not occur. Section III.A.2 (sixth planning assumption).

Because mainstem dam breaching would be such a major event, because it has been such a subject of intense debate, and because it is an issue ultimately under the control of Congress and not the Council or the regional federal agencies, the Council found it necessary to consider the likelihood of a dam breaching decision and action in the next few years, so as to know how to proceed in that and other areas of the program in the near term. On the basis of the federal agency planning documents, recommendations, comments and other supporting information, the Council concluded that “[f]or the purpose of planning for this fish and wildlife program, and particularly the hydrosystem portion of the program, the Council assumes that, in the near term, the breaching of the four federal dams on the lower Snake River will not occur.” Section III.A.2. This is not a statement of the Council's position on the issue, but instead a statement of the Council's informed conclusion about what others are likely to do during the period in which this version of the fish and wildlife program is being implemented. The Council further recognized that the Council is obliged under law to review its fish and wildlife program at least every five years. “If within that five-year period, the status of the lower Snake River dams or any other major component of the Federal Columbia River Power System has changed, the Council can take that into account as part of the review process.” Section III.A.2. The hydrosystem strategies also call for the Council, working with federal agencies in the region, the tribes and the state fish and wildlife agencies, to “facilitate a long-term planning study to include consideration of reconfiguration and operational alternatives that could provide benefits for fish and wildlife on a broad scale. The study should also assess the economic and hydropower impacts of all reconfiguration and operational alternatives.” Section III.D.6.

- Systemwide water management, including flow augmentation from storage reservoirs, should balance the needs of anadromous species with those of native resident fish species in upstream storage reservoirs. Salmon populations should not suffer to maintain non-native fish or wildlife populations in the blocked areas.

Finding: The Council adopted the first part of this recommendation in the ninth planning assumption, Section III.A.2, and in the hydrosystem strategies, Section III.D.6. The Council stated the second part of the recommendation more generally -- actions to advance one species should not come at the expense of others.

- There is an obligation to provide fish and wildlife mitigation where habitat has been permanently lost due to development. In those cases, artificial production will be used to replace capacity, bolster productivity, and alleviate harvest pressure on weak naturally spawning resident and anadromous fish populations. Artificial production funded under this program will be consistent

with the guidelines provided herein and must be within an experimental, adaptive management design to evaluate benefits, address scientific uncertainties, and improve hatchery survival while minimizing the impact on, and if possible benefiting, fish that spawn naturally.

Finding: Adopted in the tenth and eleventh planning assumptions, Section III.A.2.

- Even in degraded or altered environments, native species in native habitats provide the best template and direction for needed biological conditions in most cases. Any proposal to produce or release non-native species, including resident fish substitution programs, must overcome this strong presumption in favor of native species and habitats and be designed to avoid adverse impacts on native species.

Finding: Adopted in the third planning assumption, Section III.A.2, and especially in the habitat strategy on native species, Section III.D.3, and the biological performance objectives relating to substitution, Section III.C.2.a.2.

- Harvest can provide significant cultural and economic benefits to the region, and the program should seek to increase harvest opportunities consistent with sound biological management practices. Harvest rates must be evaluated within the context of all efforts being made to restore a particular population(s). It is impossible to identify individual populations in mixed-stock harvest areas, so the assumption proposed in the Strawman, which emphasized setting harvest rates on escapement objectives designed to protect and recover naturally spawning populations, could not be implemented.

Finding: The twelfth planning assumption includes the reference to harvest benefits and attempts to increase harvest opportunities, Section III.A.2. The assumption does not include the point about harvest rates being evaluated within the context of all other efforts made to restore a population, but the Council does not disagree, and nothing in the planning assumptions or the strategies relating to harvest is inconsistent with this point. Instead, this is precisely the point of the Council's harvest strategies, which call for consideration of harvest regimes, harvest rates and escapement objectives in the context of also considering habitat and production objectives and strategies as part of subbasin planning, *see* Section III.D.5.

Based on the recommendations and comments of other agencies and tribes and others, the Council included in the planning assumption that harvest rates should be based on population-specific adult escapement objectives designed to protect and recover naturally spawning populations. The Council agrees that the way the federal, state and tribal entities currently manage the interaction of Endangered Species Act requirements and harvest management activities makes this objective difficult to achieve. As an *objective* this point seems indisputable -- harvest management, like all other activities on the river, should be designed to protect and help in the rebuilding naturally spawning populations. Also, the Council believes that a number of integrated changes in production policies (in terms both of what is released and in the expectations for the spawning possibilities of returning adults), harvest management and ESA management can make it possible to achieve the objective.

- The estuary of the Columbia River, its nearshore discharge plume and adjacent marine area, are part of the Columbia River Ecosystem. The estuary and plume are important ecological features that likely have been, and continue to be, negatively impacted by upriver management actions and local habitat change. River uses and management actions in and above the estuary must consider the effects on the estuary and the plume for the fish and wildlife species of concern to the region.

Finding: The recommended assumptions about the estuary are reflected most directly in the seventh of the provisional biological objectives for environmental conditions, Section III.C.2.b and Appendix D, and the habitat strategy regarding the estuary, Section III.D.3. The estuary is included as one of the ecological provinces of the program for this purpose, Section IV.A.

- Ocean conditions and regional climates play a large role in the survival of anadromous fish and other species in the Columbia River Basin. Management actions should strive to help those species accommodate a variety of ocean conditions by providing a sufficient level of freshwater survival and a range of biological diversity. Monitoring and evaluation actions should recognize and take into account the effect of varying ocean conditions and, to the extent feasible, separate out the effects of ocean-related mortality from that caused in the freshwater part of the lifecycle.

Finding: This recommendation is reflected in the planning assumption that states that the effects of ocean habitat on salmonids needs to be considered in evaluating fresh water management, Section III.A.2; in the two strategies relating to ocean conditions, Section III.D.8; and in the eighth of the provisional biological objectives for environmental conditions, Section III.C.2.b and Appendix D.

- The Commission struck out the assumption proposed in the Strawman that management actions must be taken in an adaptive, experimental manner, and recommended instead that most management actions can be based on prior experience. A clear statement of assumptions and objectives, and a modest monitoring effort to detect deviations from assumptions will account for most normal uncertainty. The proposed assumption in the Strawman implies an expensive and unnecessary experimental program before any action could be taken.

Finding: The Council include a planning assumption that management actions be taken in an adaptive, experimental manner because ecosystems are inherently variable and highly complex, consistent with the recommendations and comments of other agencies and tribes and others. *See* the fourth planning assumption, Section III.A.2.

At the same time, the Council does not disagree with the main point the Commission is making, and concludes that the differences the Commission sees may be based on a misunderstanding of the Council's intent. The Council is not calling for unnecessary and expensive experimental programs before any action can be taken. Instead the Council is most certainly calling for significant management actions, as the Commission and others recommended, but calling on those who undertake those actions to approach them in an adaptive and experimental manner, given the complexities and uncertainties involved in large-scale ecosystem management with fish and wildlife that range widely through this huge and complex system during their life-cycle.

Experience will of course play a large part in deciding on management actions. The approach called for here would require only, as noted by the Commission, that the actor be clear and explicit about the assumptions and information that underlie the action to be taken, that the project include a clear and explicit statement of objectives and an explicit plan for monitoring and evaluating the success at achieving the objectives and the continued validity of the underlying assumptions and information, and finally that the actor be open to using the management action to test biological problems and ecosystem dynamics and be willing to adapt the action to what is learned. Principle 7 of the scientific principles explains further: "The dynamic nature, diversity, and complexity of ecological systems routinely disable attempts to command and control the environment. Adaptive management -- the use of management experiments to investigate biological problems and to test the efficacy of management programs -- provides a model for experimental management of ecosystems. Experimental management does not mean passive 'learning by doing,' but rather a directed program aimed at understanding key ecosystem dynamics and the impacts of human actions using scientific experimentation and inquiry."

Source: Spokane Tribe
Recommendation No.: 28

Recommendation: The Spokane Tribe recommended that the Council adopt as part of the program the following two planning assumptions proposed in the Strawman:

- Systemwide water management, including flow augmentation from storage reservoirs, should balance the needs of anadromous species with those of resident fish species in upstream storage reservoirs.
- There is an obligation to provide fish and wildlife mitigation where habitat has been permanently lost due to development.

Finding: Adopted in the ninth and tenth planning assumptions, Section III.A.2.

Source: Bonneville Power Administration
Recommendation No.: 37

Recommendation: In reaction to planning assumptions proposed in the Strawman, Bonneville provided the following recommendations for and comments on planning assumptions for the Council's program. For convenience in addressing this series of recommended assumptions, a finding follows each one.

- Passage through mainstem dams for migrating juvenile and adult fish should protect biodiversity by benefiting the range of species, stocks, and life-history types in the river, and should favor solutions that best fit natural behavior patterns and river processes. Do not include the portion of the proposed assumption in the Strawman that refers to spill as the best way to do this; for some species, bypass and transport may be more biologically sound and cost effective.

Finding: Adopted in the fifth planning assumption, Section III.A.2. Based on the recommendations of fish and wildlife agencies and tribes, and on comments received on the draft program, the Council stated that survival in the natural river, not spill, should be the baseline against which to measure the effectiveness of other passage methods.

- Underlying the proposed standards in the Strawman for mainstem passage were assumptions that may not fulfill the vision, goals, or objectives of the program. If the goal of mainstem passage is to avoid jeopardy and recover listed species, then hydrosystem managers and operators should be free to select strategies that best (1) ensure the immediate survival and long term recovery of listed species, and (2) ensure long term healthy populations of native fish and wildlife. Such strategies may not mimic natural situations and processes that emigrating salmonids encountered in their evolutionary history.

Finding: The Council did not adopt this recommendation, which seemed inconsistent with the recommendation from Bonneville addressed just above. The fifth planning assumption the Council adopted states that actions to improve passage through the system should protect biological diversity by benefiting the range of species, stocks and life-history types in the river, and should favor solutions that best fit natural behavior patterns and river processes, while maximizing fish survival through the projects,

Section III.A.2. These two principles are repeated in and central to the program's hydrosystem strategies, Section III.D.6.

The recommendation misunderstands the Council's intent and understanding with regard to favoring natural behavior patterns and river processes. The Council agrees that the central point of the program is to ensure the survival and the long-term health of the fish populations affected by the hydrosystem -- all the affected fish populations, not just the listed species. These goals are reflected in the vision and objectives for the program. The principles regarding protecting biological diversity and following natural behavior patterns and river processes are means for achieving the vision. The principles first emerged from the Council's review, with ISAB assistance, of the Corps of Engineers' juvenile fish mitigation program. The ISAB concluded that the passage methods that yielded the highest survival tend to be those that best fit natural behavior patterns and river processes, which was one reason why some of the large investments in complicated passage systems produced disappointing results and why the region should therefore "favor" solutions that fit natural behavior patterns and river processes. The ISAB did not analyze juvenile transportation in that review, but other reviews and reports from the ISAB and others on transportation indicate that the same general principles apply, and so the Council included a reference to transportation actions when restating the principle in the revised program. The point remains to "favor" these patterns -- to focus on and not ignore these core biological principles, at the peril of making poorly informed decisions -- when considering what actions to take to improve passage. But if in any particular instance the analysis indicates that the passage strategy allowing for the highest survival is not the method that most mimics natural situations, there is nothing in the planning principle to prevent the selection of that strategy.

- Keep existing mitigation fisheries to the extent they do not retard the avoidance of jeopardy or recovery of listed species. Bonneville will not support actions or hydrosystem operations for non-listed species of anadromous fish that are taken at the expense of native resident fish and wildlife or mitigation fisheries.

Finding: The meaning of this recommendation is not clear. The revised program includes as a general planning assumption, repeated in the hydrosystem strategies, that systemwide water management should balance the needs of anadromous species with those of resident fish species and the needs of spawning and rearing species with migrating species, so that actions taken to advance one species do not unnecessarily come at the expense of other species, Sections III.A.2; III.D.6. Perhaps Bonneville is recommending one specific application of the general principle, in which case the revised program is consistent with the recommendation. Perhaps, however, the recommendation is challenging the program's responsibility to provide suitable conditions for non-listed anadromous fish. The Council and Bonneville have the obligation under the Power Act to protect, mitigate and enhance all anadromous fish affected by the development and operation of the hydrosystem, not just *listed* anadromous fish. Operating the system whenever possible to provide suitable spawning, rearing and migration conditions for important if non-listed anadromous stocks (often important precisely because they are relatively more productive and abundant) is as critical as providing conditions for recovery of listed fish in achieving the long-term vision of sustaining abundant, productive, and diverse communities of fish and wildlife in the basin, mitigating across the basin for the adverse effects to fish caused by the development and operation of the hydrosystem and providing the benefits from fish and wildlife valued by the people of the region.

- Bonneville recommended that it would be erroneous to focus on returning degraded or altered environments to their historic conditions. Where all niches in an ecosystem are filled, even if the ecosystem is no longer native or natural, it may be properly functioning given its configuration and constraints.

Finding: Consistent with this recommendation, the vision and the planning assumptions do not call for returning degraded environments to their historic conditions. The vision is of a Columbia River ecosystem that sustains an abundant, productive, and diverse community of fish and wildlife, mitigating across the basin for the adverse effects to fish and wildlife caused by the development and operation of the hydrosystem and providing the benefits from fish and wildlife valued by the people of the region. Wherever feasible, this is to be accomplished by protecting and restoring the natural ecological functions, habitats, and biological diversity of the basin, and where not feasible, by other methods that are compatible with naturally reproducing fish and wildlife populations. And, where impacts have irrevocably changed the ecosystem, the program will protect and enhance the habitat and species assemblages compatible with the altered ecosystem.

- Commenting on a proposed planning assumption about harvest, Bonneville agreed that harvest has many benefits, and that it may properly be determined on the basis of adult escapement. However, given the historical inability of fisheries managers to forecast adult returns accurately, harvest levels must be established with a greater margin of safety in favor of returning listed or weak stocks. To offset the impact to the culture and economics of commercial fishers, both tribal and non-tribal, Bonneville encouraged the establishment of additional selective fisheries.

Finding: The twelfth planning assumption includes the principle that “harvest rates should be based on population-specific adult escapement objectives designed to protect and recover naturally spawning populations,” Section III.A.2. The Council does not understand Bonneville’s comments about difficulties in setting harvest levels to mean Bonneville would change the fundamental objective or principle that the Council has adopted in the planning assumption -- that of trying to understand harvest management, as with all other activities, within the broader long-term objective of protecting and rebuilding naturally spawning populations. In the last sentence, Bonneville recommended a particular strategy for harvest management. The Council did not adopt into the planning assumptions anything about harvest strategies. Recommendations and findings on harvest strategies are below.

Source: PNUCC
Recommendation No. 55

Recommendation: PNUCC responded to the planning assumptions proposed in the Strawman by noting that they cause some confusion because they include both policy and factual assumptions. The planning assumptions that are statements of fact, or a reasonable assumption of what the world is like, should be separated from the Council’s policy judgements. PNUCC thus recommended an edited and re-organized set of planning assumptions, with supporting comments. Findings follow each recommended assumption.

Givens

- No single activity is sufficient to recover and rebuild fish and wildlife species in the Columbia River Basin. Successful recovery efforts must involve a broad range of strategies for habitat improvement, hydro system reform, artificial production, and harvest management.

Finding: Adopted as part of the first planning assumption, Section III.A.2.

- Increasing the abundance of single populations will not, by itself, result in long-term recovery. Restoration efforts must focus on expanding and maintaining diversity within and among species in order to sustain robust populations.

Finding: Adopted as part of the second habitat strategy, Section III.D.3.

- The Council assumes, in the near term, the four federal dams on the lower Snake River will not be breached, either because the National Marine Fisheries Service and the Corps of Engineers will not recommend it, or because Congress will not authorize and appropriate funds to do it. Given these assumptions, the region must redirect its resources and energy to actions of more immediate effect that are biologically sound and economically feasible.

Finding: The concept in this recommendation is incorporated in the sixth planning assumption in the revised program, Section III.A.2.

- Native species in native habitats provide the best template and direction for needed biological conditions. Non-native species, including resident fish substitution programs, must be designed to avoid adverse impacts on native species. This is especially important for weak naturally spawning populations listed under the ESA.

Finding: Incorporated in the third planning assumption, Section III.A.2, and especially the habitat strategy on native species, Section III.D.3, and the biological performance objectives relating to substitution, Section III.C.2.a.2.

Policy Judgements

- Improvements in the status of fish and wildlife populations in the basin requires maintaining and improving habitat supporting existing populations that are healthy and productive and connecting to adjacent habitats that have been historically productive. The proposal in the Strawman to focus on strong populations is not consistent with the mandates of the ESA. It could be appropriate for the Council to focus both on strong and weak populations, but one cannot dominate the other.

Finding: The Council did not directly adopt this recommendation, but the revised program is consistent with it. As discussed above, the concept proposed in the Strawman of “building from strength” and focusing first on habitat that supports existing productive populations caused a number of recommending entities to be concerned that the Council might give priority in the program to protecting habitat for productive populations at the expense of weak populations at risk of extinction. That is not the case in the revised program, which, consistent with this and other recommendations, seeks to create ecosystem conditions that both protect and expand healthy populations *and* allow for recovery of listed populations.

The planning assumption as adopted focused instead on describing the general approach of a habitat-based program, rebuilding healthy, naturally producing fish and wildlife populations by protecting, mitigating, and restoring habitats and the biological systems within them. Having both goals does not necessarily call for different approaches or core strategies. The best available scientific knowledge indicates, as expressed in the habitat strategies, that “building from strength” -- protecting and expanding and connecting from relatively productive habitats -- can and should apply to weak populations where possible as well as to more productive populations. *See* the first of the habitat strategies, Section III.D.3, and the first of the provisional biological objectives for environmental characteristics, Section III.C.2.b and Appendix D. The habitat-based approach to mitigation and recovery is central to the revised program, reflected in various ways throughout the program, including the vision, Section III.A.1; the planning assumption regarding a habitat-based program, Section III.A.2; the objectives for biological performance (calling for a halt to the decline in the near-term and a restoration of the widest possible set of healthy populations in the middle term), Section III.C.2.a; the basin-wide objectives for environmental characteristics, Section III.C.2.b and Appendix D, Section 9; and the habitat strategies, Section III.D.3.

- The program will protect and enhance the region's strong meta-populations while restoring weak populations listed under the ESA. This is a new approach designed to broaden the management focus to more than just weak populations and sub-populations that have been the focus of management under the ESA. A simultaneous focus on both strong and weak stocks of fish will encourage natural straying that, when combined with managed supplementation, will rebuild weakened naturally spawning populations.

Finding: This Council did not include this recommendation as one of the planning assumptions, but the Council did not disagree with its basic point. Its substance is reflected in the vision, Section III.A.1; the first of the provisional biological objectives for ecosystem characteristics, Section III.C.2.b and Appendix D, Section 9; in the habitat strategies, Section III.D.3; and in the description of the linkage of biological objectives to strategies, Section III.D.2.

- Management actions must include integrated research and evaluation to measure biological effects on the ecosystem. Scientific measurement and evaluation are required for adaptive management to work.

Finding: The revised program is consistent with this recommendation, even if not worded the same. *See* the fourth planning assumption, Section III.A.2; Principle 7 of the scientific principles, Section III.B.2; and the standards for monitoring and evaluation, Section III.D.9.

- Actions to improve fish survivals at all life stages should protect biological diversity by benefiting the full range of species, stocks and life-history types, and should favor solutions that best fit natural behavior patterns and processes. PNUCC broadened the policy statement proposed in the Strawman to include the entire life-cycle. The statement in the Strawman applying these principles only to dam passage is too narrow as a general policy statement, and the reference to spill as the baseline is a scientific judgement of the effects of spill on the overall productivity of anadromous populations, not a policy statement.

Finding: The Council does not disagree with PNUCC's general application of these two principles throughout the life-cycle. However, the principle first emerged out of the Council's review, with ISAB assistance, of the Corps of Engineers' juvenile fish mitigation program, and the Council wanted to continue to emphasize the relation of this principle to mainstem dam passage, *see* the fifth planning assumption, Section III.A.2. Based on the recommendations of fish and wildlife agencies and tribes, and on similar comments received on the draft program, the Council stated in the revised program that survival in the natural river, not spill, should be the baseline against which to measure the effectiveness of other passage methods.

- System-wide water management, including flow augmentation, should balance the needs of anadromous species with those of resident fish species in streams and storage reservoirs, and with other uses of the Columbia Basin waterways. This would be an important policy statement from the Council because ESA management fails to provide any balancing with the needs of other species or other uses of the river.

Finding: Incorporated as part of the ninth planning assumption, Section III.A.2, and the hydrosystem strategies, Section III.D.6.

- PNUCC recommended a policy statement to the effect that resident fish and wildlife protected under the Endangered Species Act be given priority equal to listed anadromous fish when planning reservoir operations.

Finding: The Council did not adopt this as a distinct planning assumption, but did incorporate the concept in the program. As noted just above, the revised program calls on system operations to balance the needs of resident fish, listed or not, with those of anadromous fish, and the needs of migrating fish with those of spawning and rearing fish. *See* Sections III.A.2 (planning assumption on systemwide water management), III.D.6 (hydrosystem strategies on systemwide water management and coordination). This is less a matter of assigning strict priorities to each category than it is of finding ways of moving system operations more toward protecting and restoring the natural ecological functions, river processes, and habitats of the river basin, and allowing those conditions to support a diverse set of fish and wildlife affected by the hydrosystem, with the long-term goal of both allowing for recovery of listed fish and establishing the levels of productivity and abundance that will provide significant harvest opportunities and other benefits. Specific operations to implement this objective will be one of the subjects of the mainstem plan phase of the program amendment process, *see* Sections III.D.6, VIII.1.

- PNUCC recommended that the program recognize that the region's system of dams is fundamental to maintaining public health and safety during floods and the hydropower system is an integral component of the region's economy. Every aspect of the economy benefits from the power, navigation, irrigation and recreation benefits that are provided by the dams. The integrity and functionality of this system for its multiple uses should be an integral part of the Council's vision. Changes in the system's configuration may occur, but only when critical survival bottlenecks are identified that cannot be circumvented through other means and where the costs are justified by the probable biological benefits.

Finding: The Council did not adopt this recommendation as a distinct planning assumption or provision, but it does not disagree with the points made, and there is nothing in the revised program inconsistent with the recommendation.

- There is an obligation to provide fish and wildlife mitigation where habitat has been permanently lost due to federal hydropower development. In those cases, artificial production should continue to be used to replace capacity and bolster productivity, but this strategy can only be used to the extent that mixed stock harvest pressure can be alleviated on weak naturally spawning anadromous and resident fish and wildlife populations. Artificial production must include an experimental, adaptive management design to evaluate benefits, address scientific uncertainties, and improve hatchery survival while minimizing the impact on, and if possible benefiting, fish that spawn naturally. The linkage between hatchery production and mixed stock harvest must be broken before hatcheries can be used to support harvest objectives.

Finding: This recommendation is partly incorporated in the tenth and eleventh planning assumptions in the revised program, Section III.A.2. The Council did not adopt the sentence on mixed-stock harvest as part of the planning assumption. The Council recognizes the problem that underlies that part of the recommendation, and responded to it in a different way. A separate planning assumption states the Council's basic principle with regard to harvest: The region should seek to increase harvest opportunities where it can, but in any event manage harvest along with production and other activities so as not to preclude the protection and recovery of naturally spawning populations.

Harvest management and practices are largely outside of the scope of the Power Act provisions concerning the program, but it is a subject the Council cannot ignore in planning, given the impact of harvest actions on the fish and wildlife that are the subject of the program and the impact of the program on what is available to harvest. The Council agrees that the situation must end in which artificially produced fish can neither be harvested nor allowed to spawn because of known or possible adverse effects on weak populations, or *if* harvested, put ill-advised pressure on the weak populations. Changes in a

number of areas, not just in harvest management, will be necessary to resolve this situation -- artificial production reform, changes in harvest management and practices, and changes in the way the region understands and manages endangered species and risk. The ultimate solution is almost certainly to be a mix of these strategies. The program's ability to directly influence harvest management to bring about these changes is minimal. But the program can have significant effects on production reform, subbasin planning and fish and wildlife projects funded by Bonneville, and through these vehicles indirectly on harvest management. Principles and strategies for this purpose are in the artificial production and harvest strategy sections, Sections III.D.4 and .5. The Council calls on the subbasin plans to take a critical look at, and make consistent choices about, the relationships between artificial production, natural production, harvest and rebuilding objectives. Recommendations and findings on artificial production and harvest strategies are below.

- Harvest can provide significant cultural and economic benefits to the region, and the program should seek to increase population-specific harvest opportunities based on adult escapement objectives designed to protect and recover natural spawning populations. To achieve this goal, the Council should call for a shift in the region's harvest management away from mixed stock harvest and toward live capture and release of all non-targeted populations and/or toward terminal fisheries that are highly stock specific. so that harvest pressures can be focused on hatchery produced fish.

Finding: The Council incorporated the first part of this recommendation in the twelfth planning assumption in the revised program, Section III.A.2. The Council did not address methods of harvest, for the reasons noted in the previous finding. Recommendations on harvest strategies, including selective fisheries, are discussed in more detail in findings on harvest recommendations, below.

- The overall management philosophy for the region's salmon and steelhead resources should be changed to value over-escapement more highly than over-harvest. Spawning-out salmon carcasses should be left in the streams to provide a valuable food source for next year's progeny and harvest management practices should be changed to protect naturally spawning populations from uncertainties in harvest management practices.

Finding: The revised program states that harvest efforts "should be based on population-specific adult escapement objectives designed to protect and recover naturally spawning populations," Section III.A.2. This is generally consistent with the concept underlying this recommendation. The harvest strategies include a call to manage harvest so that uncertainties in knowledge about run sizes and harvest impacts do not threaten the survival and recovery of naturally spawning populations, Section III.D.5. The Council did not adopt a specific strategy on carcasses, but instead a general environmental objective to "[I]ncrease energy and nutrient connections within the system to increase productivity and expand biological communities," Section III.C.2.b and Appendix D.

- There are competing demands for the region's limited financial and human resources. The Council should establish biological priorities based on the degree to which proposed management actions contribute to the accomplishment of the vision. These biological priorities should insure that trade-off decisions are based on sound science and that they are economically rational and efficient. Those actions that have the greatest biological benefits at the lowest cost should be implemented first.
- The program should provide top down priorities based on the best scientific information available and guided by the vision. Regional objectives and priorities must be balanced with local objectives and priorities established through bottom-up watershed council decisions. These watershed councils should be made up of individuals who accept responsibility for managing and

improving their local environment. This will help to create a sense of local ownership in the program's recovery and the salmon management efforts.

- The Council should provide "top down" funding decisions that allocate available resources to individual projects and watersheds according to the program's established biological priorities. The Council should lead the implementation of the program by focusing the available resources toward the accomplishment of the Council's vision.

Finding: These three recommended policy statements have been grouped for response, as they are largely versions of the same basic point. The Council did not include these statements in the planning assumptions, as they are better reflected throughout the program. The program's descriptions of how the Council intends the revised program framework to function are consistent with these recommendations. The program provides guidance through the vision, biological objectives, and implementation guidance. Locally-constructed subbasin plans are intended as the vehicle for integrating specific subbasin objectives and actions consistent with the vision, biological objectives and standards into the broader program. Proposed management actions should be selected only if consistent with the subbasin plan objectives -- and thus with the rest of the program's objectives -- and after scientific review. *See* Sections III.A.1 (description of role of vision); III.C.1 and .4 (significance of biological objectives and strategies); III.D.1 (description of role of strategies); V (description of role of subbasin plans). While there is a "top-down" element to the way in which the revised program is to function, there is also a heavy emphasis on "bottom-up" input as well, reflected for example in the introduction to the subbasin planning section of the program: "The plans must be consistent with the visions, biological objectives, and strategies adopted at the basin and province levels, but otherwise are free to make unique choices and reflect local policies and priorities." Section V.

Major obstacles to economically rational and efficient decisionmaking have been the difficulty in establishing concrete biological objectives *and* the even greater difficulty of being able to trace any particular action to a change in overall biological performance. The Council believes it is setting in place a program framework and analytical approach to biological objectives, planning and decisionmaking that can overcome those difficulties.

- The Council should recommend changes in federal, state and local statutes, policies and ordinances that are necessary to enhance and enforce the region's accomplishment of the program's vision, goals and objectives.

Finding: The Council did not include this recommendation. The Power Act intends that the Council look to existing authorities to implement a program to protect, mitigate and enhance fish and wildlife. More important, and as noted above, at this time the Council believes the leadership it can best provide in the regional fish and wildlife program is to aim not at reforming our legal mandates in Congress or the courts, or at declaring the mandates irreconcilable and choosing to try to achieve some and not others, but instead to try to change the ways the region implements the various mandates, which speak to different but equally important values, in a more consistent fashion.

Source: Idaho Water Users
Recommendation No. 18

Recommendation: The Idaho Water Users recommended the following planning assumptions:

- Systemwide water management, including flow augmentation from storage reservoirs, should balance the needs of anadromous species with those of resident fish species in upstream storage reservoirs. Resident species, including listed species, were not adequately considered in

development of the current program, especially with respect to the call for 1.427 million acre-feet of water from the upper Snake River.

- Harvest rates should be based on population-specific adult escapement objectives designed to protect and recover natural spawning populations.
- The proposed assumption in the Strawman that “spill should be the baseline against which to measure the effectiveness of other passage methods” should not be included in the program. Spill is a problematic benchmark due to dissolved gas issues, direct mortality from spill, lack of a way to measure success, and potentially reduced transport effectiveness.

Finding: The recommendation concerning systemwide water management is incorporated in the ninth planning assumption, Section III.A.2. The reference to water from the upper Snake was not included, in part because it was too specific for the basinwide planning assumptions and because it focused on a past event and not future planning needs. As a general matter, the Council does not agree that resident species were not adequately considered in the adoption of the 1994-95 Fish and Wildlife Program.

For the recommendation regarding harvest rates, *see* the twelfth planning assumption, Section III.A.2.

Based on this and other recommendations, and on comments received on the draft program, the Council stated that survival in the natural river, not spill, should be the baseline against which to measure the effectiveness of other passage methods. *See* the fifth planning assumption in the revised program, Section III.A.2.

Source:	Northwest Irrigation Utilities, Columbia-Snake River Irrigators Association, Eastern Oregon Irrigators Association
Recommendation No.	25

Recommendation: These irrigation interests recommended that dam breaching be eliminated from further review or consideration. Costs would exceed the region’s willingness-to-pay for uncertain fish benefits.

Finding: The Council did not adopt the recommended planning assumption concerning dam breaching. The Council did not adopt or reject any recommendation calling for the breaching or drawdown of specific dams or for an elimination of dam breaching as a possible action. As major an event as dam breaching would be, it is still a specific implementation measure, and specific implementation objectives and measures were not the subject of this phase of the amendment process. Specific objectives and measures for the mainstem will be the subject of a subsequent program amendment process, *see* Sections III.D.6, VIII.1. The Council is deferring consideration of all specific hydrosystem and mainstem measures until that more appropriate amendment phase, when they may be resubmitted in the same or modified form.

For the purpose of planning for this fish and wildlife program, the Council did assume that, in the near term, the breaching of the four federal dams on the lower Snake River will not occur. Section III.A.2 (sixth planning assumption). This is not a statement of the Council’s position on the issue, but instead a statement of the Council’s informed conclusion about what others are likely to do during the period in which this version of the fish and wildlife program is being implemented.

Source: Inland Ports and Navigation Group
Recommendation No. 49

Recommendation: The Inland Ports and Navigation Group recommended that recovery strategies move away from the hydro-centric approach that has marred the region’s approach to recovery of listed fish species. Failure to step back from the narrow debate over dam breaching, or the simplistic equation of dams versus fish, will only ensure that the region risks a litigation-driven strategy that serves only a narrow purpose. Instead, the Group recommends that the Council focus its programs on providing shorter term benefits to listed species.

Finding: Consistent with this recommendation, the Council adopted a program based on the assumption that “[n]o single activity is sufficient to recover and rebuild fish and wildlife species in the Columbia River Basin. Successful protection, mitigation, and recovery efforts must involve a broad range of strategies for habitat protection and improvement, hydrosystem reform, artificial production, and harvest management.” On the other hand, as a long-term planning entity as well as an agency interested in near-term implementation, the Council does not believe it would be prudent to focus only on short-term benefits.

Source: Bill Bosch
Recommendation No. 3

Recommendation: Reacting to the planning assumption proposed in the Strawman regarding the likelihood of dam removal, Mr. Bosch recommended that mainstem dams stay in place for now. The Council should design transition plans that are ready to implement, so that if the region does decide to remove a dam, existing systems are essentially “unplugged” and new systems “plugged in” with virtually no effect on current users. As the dams become obsolete, especially on the tributaries, we should remove them and restore a more natural ecosystem, as is planned for the Condit Dam on the White Salmon River. Removing smaller dams will give the region experience as to the “do’s and don’ts” of dam removal and give us time to develop transition plans for larger dams. Planning for the transition to a life beyond the dams should be seen as a 20 to 50 year effort.

Finding: *See* the Council’s response to the recommendation concerning dam breaching just above. The hydrosystem strategies do call for the Council, working with federal agencies in the region, the tribes and the state fish and wildlife agencies, to “facilitate a long-term planning study to include consideration of reconfiguration and operational alternatives that could provide benefits for fish and wildlife on a broad scale. The study should also assess the economic and hydropower impacts of all reconfiguration and operational alternatives.” Section III.D.6.

3(b) Biological objectives (basin level)

Source: Oregon Department of Fish and Wildlife
Recommendation No. 26

Recommendation: In the Strawman, the Council proposed a particular role for “biological objectives” in the revised program. Biological objectives would describe the type of ecological conditions or system that is needed to achieve the vision. Biological objectives would have two components: (1) *environmental characteristics* would describe physical and biological habitat conditions and their functions in the ecosystem; and (2) *biological performance characteristics* would describe the expected response of specific species to the environmental conditions. Environmental characteristics would include measures of habitat condition such as flow, water quantity and quality, vegetation, sediment, land use and ecological function. Biological performance would be an expression of these characteristics, measured for aquatic and terrestrial species such as chinook salmon, bull trout, beaver and black bear in terms of population abundance, capacity, productivity and life history diversity. An attachment at the end of the Strawman proposed a set of what were called “examples” of basinwide biological objectives.

Oregon subsequently recommended a description of the role biological objectives would play in the revised program that was similar in substance to what was in the Strawman. The program should also state that biological objectives would direct the program to achieve the following:

1. Protect the habitats and ecological functions that are currently productive for fish and wildlife populations and communities.
2. Restore degraded habitats, functions, and populations and improve the connections among habitats and areas important to the survival and productivity of fish and wildlife.
3. Rehabilitate ecological processes and functions as necessary to achieve goals for specific fish and wildlife species and populations.
4. Design protection and restoration efforts to address problems that affect the entire natural and cultural ecosystem, including terrestrial, freshwater, estuarine and marine habitats.

Oregon recommended that a subbasin planning process provide province- and subbasin-level biological objectives, to be adopted into the program at a later date. Oregon then recommended the following objectives for the program as a whole, as general statements of the management intent of the program:

Environmental Characteristics

- Freshwater and terrestrial habitat of sufficient quality, quantity, diversity, and distribution to ensure the survival and productivity of all life history stages of fish and wildlife, including ecological connectivity between aquatic areas, riparian zones, floodplains and uplands.
- Water quality that meets state and federal standards.
- Energy and nutrients at sufficient levels within watersheds to sustain productive biological communities. Nutrient levels within water quality standards.
- Habitat and ecosystem functions necessary to support biological diversity among and within populations and species and to increase ecological resilience to environmental variability.
- Hydrographs within watersheds that approximate historic natural patterns.
- Normative ecosystem functions in the Columbia River estuary and nearshore ocean discharge plume.

Biological performance

- Productive fish and wildlife populations that survive and prosper under the full range of environmental conditions they face in their lifetime.
- Abundant fish and wildlife populations that survive and prosper under the full range of environmental conditions they face in their lifetime and support the social objectives identified in the vision (including harvest).
- Abundant fish and wildlife populations that survive and prosper under the full range of environmental conditions they face in their lifetime and serve important ecological functions in the environments they occupy.
- Diverse fish and wildlife populations that exhibit a full range of genetic and life history traits necessary to survive and prosper under the full range of environmental conditions they face in their lifetime.
- Fish and wildlife populations distributed in space and time such that they survive and prosper under the full range of environmental conditions they face in their lifetime, and are able to repopulate local habitats in the event of a catastrophe.

Finding: The Council adopted this recommendation by incorporating its substance into the program in various places, not all in the biological objectives section. The Council defined “biological objectives” for the purposes of this program consistent with Oregon’s recommendation. Sections II.C, III.C.2. The substantive content of the objectives for biological performance and the provisional objectives for environmental characteristics are consistent with and in part derived from this recommendation. Sections III.C.2.a, C.2.b and Appendix D. The vision statement, the planning assumptions about a habitat-based program, and the basinwide habitat strategies also include concepts from this recommendation, especially the general description of what the program is trying to achieve. Sections III.A.1, A.2, D.3.

As discussed above in the findings relating to the vision, Oregon and other fish and wildlife agencies and tribes recommended, as goals for the program, a general approach for population performance objectives that was refined further in comments on the draft program. The Council incorporated the substance of this approach into the interim biological performance objectives. Section III.C.2.a.

Source: National Marine Fisheries Service
Recommendation No. 54

Recommendation: The National Marine Fisheries Service responded to the list of example biological objectives in the Council’s Strawman with the following comments and recommendations:

- There is considerable overlap in the two categories of example objectives, “Ecosystem Characteristics” and “Biological Performance Standards.” NMFS recommended a more logical segregation would be into two sets of objectives, one set for habitat and the other for population goals. The suggested organization would group the objectives 1 and 2 in the current ecosystem characteristics and objectives 1 and 3 under the current biological standards as Habitat Objectives. The remaining bullets would be grouped into Population Objectives. With this organization, much of the overlap between objectives in the examples would be eliminated.
- Objectives should be at a higher level and less detailed than the example. The major heading for bullet 1 under “Ecosystem Characteristics” should suffice as one of the generic objectives for habitat without listing the subbullets. NMFS does not disagree with the sub-bullets, it is just that listing them gives the impression that they are comprehensive.

- Temper the emphasis on focusing only on the current strong populations and building out from those populations. The basic strategy of focusing on strong populations (NMFS prefers the phrase “productive” over “strong”) is fine, however it is possible that recovery planning could identify some key populations that do not meet the “strong” or “productive” definition but that are essential to the ESU’s integrity. While accepting in general the concept of protecting and building out from core productive populations, NMFS expressed the following concerns: First, it is difficult to define a core population of threatened and endangered species as a population that is presently “large” or “strong.” Most threatened and endangered species or ESUs do not have many large populations. It would be better to look at productive areas in terms of historic production and present or potential production capacity. Second, we do not have viable salmonid population (VSP) analyses completed for listed ESUs. Those analyses may determine that some of the weak populations are absolutely critical to maintaining the genetic integrity of the ESU as a whole. The weak populations should still be protected until we have better analyses of their role in the ESUs’ overall health.
- Do not use the final subbullet under the Ecological Characteristics Objective 5. Water quality is one of a suite of attributes associated with habitat quality. Trends in water quality do not necessarily reflect improvements in habitat condition. There are many examples of habitat with high quality water but with poor physical channel characteristics.
- Revise biological objectives 4 and 5 to be generic for salmon and steelhead and to specifically reference the recovery planning process. These objectives address population abundance, distribution and productivity, which are the criteria that will be used to define ESU recovery. The specific goals should be determined as part of the recovery teams planning process.

Finding: The Council adopted biological objectives consistent with the points made in this recommendation. This includes especially the recommendations concerning the organization and level of detail appropriate at this time for the basinwide biological objectives. *See* Sections III.C, Appendix D. The provisional objectives for environmental characteristics do state that “[h]abitat restoration may be framed in the context of measured trends in water quality,” Appendix D, #3, consistent with other recommendations (and with elements of the federal agencies’ Conceptual Recovery Strategy and Biological Opinions). The Council does not mean this objective to be conclusive or determinative. Instead, by this objective, the Council agrees with the Fisheries Service that water quality is just one of a suite of attributes associated with habitat quality and that trends in water quality may but do not necessarily reflect improvements in habitat condition. The scientific literature indicates only that water quality is so important as a fish habitat attribute that it appropriate to focus particular attention on it in this way. This and the other objectives are provisional, however. The Council is requesting review by the Independent Scientific Advisory Board and anticipates further development and modification of these objectives. Section III.C.2.b, III.C.3, VIII.2, Appendix D.

As explained in findings above responding recommendations for the planning assumptions, the concept of “building from strength” and focusing first on habitat that supports existing productive populations caused the Fisheries Service and others to be concerned that the Council might be inclined to give priority to protecting productive populations at the expense of weak populations that are at risk of extinction. This was not the intent, and the Council adopted provisions to make this clear. Consistent with this and other recommendations, the program seeks to create the ecosystem conditions that both protect and expand healthy populations and allow for recovery of listed populations, as recognized first in the vision, Section III.A.1. And having both goals does not necessarily call for different strategies. As indicated in the recommendation from the Fisheries Service, focusing on protecting, expanding and connecting from relatively productive habitats and historic production areas -- what the Council means by “building from strength” -- can and should apply to weak populations as well as more productive populations. *See* the first of the habitat strategies, Section III.D.3, and the first of the provisional biological objectives for environmental characteristics, Section III.C.2.b and Appendix D.

Source:	Montana Fish, Wildlife and Parks
Recommendation No.	31
Source:	Burns-Paiute Tribe
Recommendation No.	34
Source:	Shoshone-Bannock Tribes
Recommendation No.	38
Source:	Washington Department of Fish and Wildlife
Recommendation No.	43
Source:	U.S. Fish and Wildlife Service
Recommendation No.	46

Recommendation: Montana recommended a set of “Habitat Strategies and Standards,” and another set of “Production Strategies and Standards.” In concept and content these resembled the biological objectives proposed in the Council’s Strawman. The Fish and Wildlife Service, Washington and the Burns-Paiute Tribe provided similar “Habitat Strategies and Standards.” The Shoshone-Bannock Tribes provided many of the same recommendations and also provided additional habitat strategies and standards not provided in the others’ recommendations. The recommendations are summarized here, with notes on the source when less than all five recommending entities.

Habitat Strategies and Standards

- Protect and restore freshwater habitat for all life history stages of the focal species. Protect and increase ecological connectivity between major habitat types, including aquatic areas, riparian zones, floodplains and uplands.
 - Increase the connections between rivers and their floodplains, side channels and riparian zones.
 - Manage riparian areas to protect the aquatic system and form a transition to floodplain terrestrial areas and side channels.
 - Identify, protect and restore the functions of key alluvial river reaches.
 - Reconnect restored tributary habitats to protected or restored mainstem habitats, especially in the area of productive mainstem populations.
 - Establish habitat connections between protected terrestrial and aquatic areas.
 - Land and water activities should allow riparian zones to maintain a range of normative vegetative characteristics, i.e., characteristics occurring in watersheds with normative disturbance patterns.
 - Increasing the percentage of normative riparian zones should include an increase in percentage of riparian zones with late-successional forest characteristics.
 - Maintain, increase and connect native plant community composition and structures.
 - The Shoshone-Bannock Tribe added: Improve mainstem migration corridor conditions to those that best mimic a natural river system.
- Increase energy and nutrient connections within the system to increase productivity and expand normative biological communities.
 - Increase connections within freshwater areas to facilitate wide distribution of energy and nutrients within the system.
 - Increase the abundance of resident fish to distribute energy and nutrients within freshwater areas, especially above anadromous blockages. (Montana did not include this objective.)
 - Establish riparian conditions that allow energy and nutrient transfer between terrestrial and aquatic areas via predation, carcass scavenging or plant production and grazing.

- Washington and the Burns-Paiute Tribe added: Increase the abundance of anadromous fish to increase the biomass of ocean-derived energy and nutrients delivered to freshwater areas.
- Manage human activities so that patterns of water run-off and flow tend more than at present toward the natural hydrographic pattern in terms of quantity, quality and fluctuation.
 - Increase seasonal fluctuations in flow. Stabilize daily fluctuations.
 - To increase habitat connections, increase percentage of reaches with free-flowing discharge regimes.
 - Increase the correspondence between water temperatures and the normative regimes of temperatures throughout the basin.
 - Significantly reduce watershed erosion where human activities have accelerated sediment inputs. Human activities should tend toward no net increase in sediment over natural inputs.
 - Habitat restoration may be framed in the context of measured trends in water quality - functional habitats for the focal salmonid species are characterized by high quality water (pure, cool and clear).
- Population/meta-population structure -- general objectives:
 - Habitat for fish is dynamic - suitable habitat is constantly being created and destroyed by natural processes. Do not destroy habitat patches faster than naturally created. Protect both the total area and the number of habitat patches.
 - Protecting the habitat and ecological functions that support source sub-populations is the highest priority.
 - Maintain habitat patches that appear to be suitable or marginally suitable for the focal species, but which currently contain no fish. In the dynamics of natural populations, there may be time lags between the appearance of empty but suitable habitat and colonization of that habitat from a source population.
 - Natural rates of straying and dispersal among sub-populations should not be substantially increased or decreased through human actions.
 - Protect the habitat and thus the populations within a meta-population or an otherwise connected set of populations or sub-populations across a significant portion of the range of those connected populations. Some of the populations/sub-populations should be geographically widespread, reducing the risk of extinction from spatially correlated environmental variation. Some of the populations should be geographically close and well-connected to each other for re-colonization support in the event of the decline of one.
 - Allow for the protection of population structures that display diverse life histories and phenotypes.
 - Population status evaluations should take into account hypotheses and uncertainty about population structure.
- Only Washington and the Shoshone-Bannock Tribes recommended the following objective and sub-objectives: Allow for biological diversity to increase among and within populations and species to increase ecological resilience to environmental variability.
 - Expand the complexity and range of normative habitats to allow for greater life-history and between species diversity.
 - Manage human activities to minimize artificial selection or limitation of life history traits.
 - Restoring habitat and access to habitat that establishes life history diversity is a priority.
 - Expand and connect existing habitat pockets to facilitate development of normative population structures for aquatic communities.
 - Identify, protect and restore normative ecosystem functions in the Columbia River estuary and nearshore ocean discharge plume as affected by actions within the Columbia River watershed.
 - Enhance the natural expression of biological diversity in salmon and steelhead populations to accommodate mortality and environmental variability in the ocean.

- Evaluate flow regulation, river operations and estuary-area habitat changes to understand better the relationship between estuary and near-shore plume characteristics and the productivity, abundance and diversity of salmon and steelhead populations.
- Protection and expansion of normative habitats and ecological functions should also allow for an increase in the number, complexity and range of multi-species fish and wildlife assemblages and communities. Increases in the productivity, abundance and life-history diversity of specific fish and wildlife populations are dependent on and should not be viewed in isolation from these multi-species communities.

The Shoshone-Bannock Tribes added these further sub-objectives:

- Increase genetic connections and gene flow within the ecological system to facilitate development, expansion and protection of normative population structures.
- Increase the abundance and range of existing habitats and populations.
- Protection and expansion of normative habitats and ecological functions should increase the productivity, abundance, life-history diversity and complex structure of the fish and wildlife populations.
- Accept significant variation in the first three indicators; productivity, capacity and/or life-history diversity -- for any particular population over any particular time period, as part of the normal environmental condition. A measure of whether key ecological functions have increased sufficiently will be whether the system can accept normal environmental variation without collapse of the fish and wildlife population and community structure.
- Allow for the restoration of more normative population structures by allowing for the expansion of productive populations and by habitat restoration actions that connect weak populations to stronger populations and to each other. Allow for the recovery of depleted populations to at least the point of self-sustainability and a low probability of extinction.
- Protect and expand the habitat and ecosystem functions that support steelhead and bull trout, and that steelhead and bull trout contribute to so as to significantly increase their abundance, productivity, life history diversity and structural complexity well above the recovery level.

Production Strategies and Standards

- No single activity is sufficient to recover and rebuild fish and wildlife species in the Columbia River Basin. Successful recovery efforts must involve a broad range of strategies for habitat protection and enhancement, hydrosystem reform, artificial production, and harvest management.
- Efforts to improve the status of fish and wildlife populations in the basin should focus first on protecting existing populations that are healthy and productive and expand those populations into adjacent areas that have been historically productive or have a likely probability of sustaining healthy populations by reconnecting or improving habitat. However, conservation efforts should focus first on those populations or habitats at immediate risk while simultaneously establishing a no net decline policy for currently pristine habitat and productive stocks.
- Increasing the abundance of single populations will not, by itself, result in long-term recovery. Restoration efforts must focus on developing ecosystem conditions and functions that will allow for expanding and maintaining a diversity within and among species in order to sustain a system of populations in the face of environmental variation. However, some populations are so low in number that the prudent action may be to increase abundance first and fix the factors that lead to the decline second. Genetic concerns associated with small effective population size are best addressed by quickly increasing abundance. (The Shoshone-Bannock Tribes did not include the last sentence.)
- Where habitat has been permanently lost due to development, artificial production may be used to replace capacity, bolster productivity, and alleviate harvest pressure on weak naturally spawning

populations. (The Shoshone-Bannock Tribes worded this objective differently. The Fish and Wildlife Service did not include this objective.)

- Population structure -- salmonid meta-population hypothesis. Manage all salmonid populations under a meta-population hypothesis, that is, under the assumption that salmonid populations under more normative ecosystem conditions in the Columbia formed (and will form again) a spatially structured system of core and satellite local populations connected to some degree by dispersal within a general framework of local adaptation with resultant life history diversity. (The Fish and Wildlife Service did not include this objective or the sub-objectives that follow.)
 - Allow for the development of sustainable meta-population structures to reduce risks of extinction and increase life history diversity, adaptive capacity, and population stability and resilience in the face of environmental and human variation.
 - Core populations are large productive populations with low probabilities of extinction that may serve to stabilize productivity in their region and function as a source population for recolonization of connected but less favorable habitats where satellite populations occur. Focus restoration efforts on (1) identifying and protecting the habitats for currently productive core populations, (2) expanding remaining core population areas by habitat restoration activities and improved connections between areas that are productive or potentially productive; (3) restoration and/or reconnection of potential core habitats at strategic areas in the basin; (4) improving habitat and connectivity from the cores to areas with current or potential productive capacity for satellite populations. (Washington added two concepts to this sub-objective: The large chinook populations that once existed in the mainstem and lower tributaries to the Columbia and Snake apparently served as core populations for provincial meta-populations. Redirect present restoration efforts, which focus almost exclusively on weak, remaining satellite populations.)
 - Truly significant and sustainable increases in the abundance of naturally spawning salmon in the Columbia River are unlikely without restoring spawning and other habitats in mainstem and lower tributary areas for chinook salmon with the ocean-type life history. (Washington did not include this sub-objective.)
- Population productivity -- general objective: Sustained productivity of the focal salmonid species requires a network of complex and interconnected habitats, which are created, altered, maintained and destroyed by natural physical processes in freshwater, the estuary and ocean. (Montana did not include this objective or the following sub-objectives.)
 - A population's natural productivity and trends in productivity should be sufficient to maintain its abundance above the viable level over time, meaning a spawner-to-spawner ratio or cohort-replacement ratio fluctuating around 1.0 or above. Population productivity estimates should span the entire life-cycle (e.g., spawner-to-spawner or smolt-to-smolt).
 - While population parameters include significant variation over time due to environmental variation, viable populations should not exhibit sustained declines in productivity or abundance that span multiple generations and affect multiple brood-year cycles.
 - Viable populations should not exhibit trends in traits that portend productivity declines (e.g., reduced size of adults; increasing age-at-return).
 - A viable population that includes naturally spawning hatchery fish should exhibit sufficient productivity from naturally produced spawners to maintain abundance at or above the viability thresholds in the absence of a hatchery subsidy, at a natural return ratio at 1.0 or higher. Such a population should not exhibit a trend of proportionally increased contributions from naturally spawning hatchery fish. (The Shoshone-Bannock Tribes did not include the last sentence.)
 - Viable anadromous fish populations (or meta-populations) should exhibit sufficient productivity during freshwater life-history stages to maintain abundance at or above viability thresholds even during poor ocean conditions.

- Population status evaluations should take into account uncertainty about productivity levels and trends in productivity.
- Population abundance
 - Populations (or meta-populations) should be large enough to survive environmental variation of the magnitude observed in the past, from ocean condition fluctuations to local disturbance.
 - Populations should be sufficiently abundant to provide important ecological functions in all environments they occupy. Salmonids modify their physical and biological environment in various ways throughout their life cycle, benefiting the population itself and improving habitat conditions for other organisms. Abundance levels required for these effects depend largely on local habitat structure.
 - Population status evaluations should take into account uncertainty about abundance.
- Population diversity -- general objective: Sustain and increase the ability of the environment to allow for various life history solutions.
 - Human-caused factors such as habitat changes, harvest pressures, passage solutions, artificial propagation, and exotic species introductions should not select for limited life histories and should not substantially alter life-history traits such as run timing, age structures, size, fecundity, morphology, behavior, and molecular genetic characteristics.
 - Natural processes of dispersal should be maintained -- human-caused factors should not substantially alter the rate of gene flow among populations.
 - Natural processes that cause ecological variation should be protected, maintained and expanded -- maintain spatial and temporal variation in habitat character.
 - Population status evaluations should take into account uncertainty about requisite levels of diversity.

Finding: The Council adopted these recommendations in part. The substantive content of the objectives for biological performance and the provisional objectives for environmental characteristics are consistent with and in part derived from these recommendations, if more general and not worded the same. Sections III.C.2.a, C.2.b and Appendix D. The vision statement, the planning assumptions, the description of the linkage between biological objectives and strategies, and the basinwide habitat and artificial production strategies also include concepts from these recommendations. Sections III.A.1, A.2, D.2, D.3, D.4. The Council did not use the term “normative” to describe particular habitat conditions, as that term is susceptible of many different interpretations. What the Council did adopt were objectives related to the core idea of protecting and restoring habitat conditions, natural river processes and ecological functions for the purpose of rebuilding and sustaining an abundant, productive, and diverse community of fish and wildlife populations.

The Council did not include in the program the full set of recommended objectives and especially sub-objectives. For example, the Council included in the vision and biological objectives the concept of protecting and increasing the ability of the environment to allow for greater population abundance, productivity and diversity and a restoration and sustaining of more natural populations structures and increase in the number, complexity and range of multi-species fish and wildlife assemblages and communities, all consistent with these recommendations. Sections III.A.1, B.2, C.1, C.2 and Appendix D. The Council decided not to include at the basinwide level at this time the full set of recommended sub-objectives and detail concerning these population characteristics. It is *not* that the Council disagrees with or believes that these objectives for populations characteristics are incorrect or inconsistent with what the Council did adopt. The Council concludes to the contrary that nothing the Council adopted is necessarily inconsistent with the detail of these recommendations. For this phase of the program revision process, the Council decided on a consistent and fairly general level of detail for the basinwide principles and objectives, and so it gleaned from these recommendations biological objectives at that level of detail. This is consistent as well with the more general recommendations from other fish and wildlife agencies (e.g., *see* the recommendations from Oregon and NMFS above). Later phases of the amendment process

will provide opportunity to incorporate more detailed objectives into the program, especially at the finer geographical levels such as subbasins, but also at the basin level. See Sections II.B, II.C, III.C, IV.B, V.A.5, VIII, Appendix D.

Source: Columbia River Inter-Tribal Fish Commission
Recommendation No.: 40

Recommendation: The Columbia River Inter-Tribal Fish Commission recommended that the Council not adopt firm biological objectives during this part of the program amendment cycle. The Commission agreed with the general concepts and what it perceived as the Council's intent in the example biological objectives proposed in the Strawman. But the Commission also concluded that some concepts were not clear and that more discussion was required before the objectives could provide practical guidance for fish and wildlife recovery efforts. Most important, the Commission recommended that developing sound, realistic basin and provincial biological objectives requires an iterative process that cannot be completed before draft subbasin assessments and plans are available. Establishing objectives at multiple spatial scales is best accomplished by an iterative process across those scales. It is almost certain that consistent objectives cannot be developed the first time we attempt to use a new approach, especially when we do not have all information (subbasin assessments) in front of us.

The Commission then recommended a description of the concept and possible general content of basinwide biological objectives, edited and adapted from the Strawman, for the purpose of improving the consistency and coherence of the concepts proposed in the Strawman while continuing to reject the firm adoption of objectives in this phase of the program revision process:

Regarding the concept and role of biological objectives in the program, the Commission recommended that "biological objectives" have two components: (1) *environmental characteristics* that describe the physical and biological habitat conditions and their functions in the ecosystem, and (2) *biological performance characteristics* that describe the expected response of specific species to the environmental conditions. Collectively, the two components forming the biological objectives should describe the type of ecological system that is needed to achieve the vision. Strategies, in turn, should describe the actions needed to achieve the environmental characteristics. Environmental characteristics include measures of habitat condition such as flow, water quality, vegetation, sediment, land use and ecological function. Biological performance is an expression of these characteristics and is measured for aquatic and terrestrial species such as chinook salmon, bull trout, beaver and black bear in terms of capacity, productivity and life history diversity.

In summary, these biological objectives are intended to direct the program to achieve the following: (1) protect the habitats and ecological functions that are currently productive for fish and wildlife populations and communities (e.g., the Hanford Reach fall chinook; spring chinook in the upper John Day River, etc.) to provide a base for expansion of healthy populations as we rehabilitate degraded habitats in other areas; (2) significantly expand the habitats, functions and populations from the core areas by habitat restoration and by improving the connections among currently productive areas (3) emphasize rehabilitation of ecological processes and functions as the means to achieve goals for specific fish and wildlife species and populations; and (4) encourage protection and restoration efforts to take into account the entire natural and cultural ecosystem affecting focal fish and wildlife species, in a continuum of terrestrial, freshwater, estuarine and marine habitats.

The Commission then recommended a summary statement of basinwide biological objectives in the two categories, as an edited version of the examples in the Strawman:

Objectives for environmental characteristics

- Protect and restore freshwater and terrestrial habitat for all life history stages of the focal species. Protect and increase ecological connectivity between major habitat types, including aquatic areas, riparian zones, floodplains and uplands.
- Increase energy and nutrient connections within the system to increase productivity and expand native biological communities.
- Expand habitat and ecosystem functions.
- Manage human activities so that patterns of water runoff and flow tend more than at present toward the natural hydrographic pattern in terms of quantity, quality and fluctuation.
- Identify, protect and restore normative ecosystem functions throughout the basin, including the Columbia River estuary and nearshore ocean discharge plume as affected by actions within the Columbia River watershed.
- Sustain and increase the ability of the environment to facilitate development of a range of life history solutions to address environmental variability.

Objectives for biological performance characteristics

- Increased productivity, abundance, life history diversity and complex structure of the native fish and wildlife populations.
- Allow for biological diversity to increase among and within populations and species to increase ecological resilience to environmental variability.
- Establish a spatially structured system of core and satellite local populations connected to some degree by dispersal within a general framework of local adaptation with resultant life history diversity. Habitat restoration should be structured to enhance these connections and encourage development of a healthy population structure.
- Increase genetic connections and gene flow within the ecological system to facilitate development, expansion and protection of normative population structures.
- Increase the abundance, productivity, life history diversity and structural complexity of salmon, steelhead, and bull trout populations well above the recovery level.
- Viable anadromous fish populations (or metapopulations) should exhibit sufficient productivity during freshwater life-history stages to meet the social objectives identified in the vision (including harvest) and maintain abundance even during poor ocean conditions.
- Populations should be large enough to survive environmental variation of the magnitude observed in the past, from ocean condition fluctuations to local disturbance and populations should be sufficiently abundant to provide important ecological functions in the environments they occupy.
- It is anticipated that the program would also contain specific performance indicators for focal wildlife species.

Responding to one example in the Strawman, the Commission commented that Hanford area fall chinook and John Day spring chinook are productive only in a relative sense, compared to other very damaged populations. Moreover, the status of Hanford fall chinook cannot be properly characterized without also discussing the influence of the Priest Rapids hatchery program. The Commission recommended that it is more accurate to characterize these two populations as “presently self-sustaining” rather than as “productive.” Nearly all salmon populations above Bonneville Dam are seriously damaged; there are no truly productive areas and populations remaining above Bonneville Dam. There are no healthy populations from which to rebuild in most cases. Moreover, healthy habitats do not result in healthy populations in all cases; otherwise Snake River spring/summer chinook would not be listed under the Endangered Species Act.

Finding: The Council adopted this recommendation by incorporating its substance into the program in various places, not all in the biological objectives section and not often in the same wording. The Council defined “biological objectives” for the purposes of this program consistent with the Commission’s recommendation. *See* Sections II.C, III.C.2. More important, the Council adopted the Commission’s recommendation that basinwide biological objectives adopted at this stage be general and, especially, provisional or interim, subject to refinement and elaboration as the program revision process moves to more specific phases and geographic levels. *See* especially Sections III.C.2, C.2.a.1, C.2.b, C.3, IV.B, V.A.3, A.5, VIII.2 and .3, and Appendix D.

The substantive content of the interim objectives for biological performance and provisional objectives for environmental characteristics are consistent with and derived from this recommendation, if more general in many cases. *See* Sections III.C.2.a, C.2.b and Appendix D. Differences in wording between the program objectives and the Commission’s recommendations were not intended by the Council to be differences in substance. The vision statement, the planning assumptions about a habitat-based program, and the basinwide habitat strategies also include concepts from this recommendation. Sections III.A.1, A.2, D.3. And as discussed above, the Commission and other fish and wildlife agencies and tribes recommended, as goals for the program, a general approach for population performance objectives, refined further in comments on the draft program. The Council incorporated the substance of these recommendations into the interim biological performance objectives. Section III.C.2.a; *see also* Appendix D (first biological objective for environmental characteristics regarding populations environmental conditions and population structure).

The Council did not use the term “normative” to describe particular habitat or population conditions as did some of the recommended objectives, as that term is susceptible of many different interpretations. What did adopt were objectives related to the core idea of protecting and restoring habitat conditions, natural river processes and ecological functions for the purpose of rebuilding and sustaining an abundant, productive, and diverse community of fish and wildlife populations.

Finally, the Commission’s comments regarding the example objective in the Strawman concerning the Hanford/John Day populations was a particular manifestation of the general concern expressed by the Commission and others about the “building from strength” concept introduced in the Strawman. As explained elsewhere, the Council adopted objectives, strategies and assumptions consistent with the concerns expressed in these recommendations. *See* the first of the habitat strategies, Section III.D.3, and the provisional biological objectives for environmental characteristics, Section III.C.2.b and Appendix D.

Source: Spokane Tribe
Recommendation No. 28

Recommendation: The Spokane Tribe recommended that the Council incorporate into the revised program the biological objectives found in Section 10.8 of the Council’s 1995 Fish and Wildlife Program for the Spokane Tribe’s resident fish programs, until replaced by objectives developed and adopted into the program through subbasin planning.

Performance standards for the program as a whole, such as water quality standards, should be developed in a separate deliberative process subsequent to and arising out of the subbasin planning effort, setting the stage for measuring performance. Certain fundamental questions also need to be resolved before the Council can adopt standards of real utility, such as : What precisely is a standard? What types

of information are required to set a standard? Do standards measure performance at the implementation project level or performance at the level of a larger unit such as a subbasin?

Finding: The Council acted consistent with this recommendation. The specific biological objectives associated with the resident fish measures adopted by the Council in 1995 remain in effect pending the development of subbasin assessments and plans.

The Council intends biological objectives to have the function the tribe described for performance standards. Objectives at the various relevant levels -- including specific projects, subbasin plans, possibly the ecological provinces, and the program as a whole -- will allow the Council and others to measure progress. The Council adopted general, interim objectives for the program as a whole in this phase, and may develop these further prior to subbasin planning, but in general adopted the tribe's recommendation that final development of specific objectives for the program or ecological provinces should follow the assessments and subbasin plans. See Sections III.C, III.D.9 (monitoring and evaluation), IV.B, V.A.3, V.A.5, VIII.2 and .3, Appendix D.

Source: Bonneville Power Administration
Recommendation No. 37

Recommendation: Bonneville recommended that the Council align its biological objectives with the performance standards to be developed by the National Marine Fisheries Service, and that objectives which address a species' specific habitat needs be coordinated and compared with NMFS performance measures. The region needs a uniform vocabulary.

The concept of performance standards is gaining acceptance in the region as a means by which attainment of specific recovery and/or mitigation objectives can be measured. They also serve as a more methodical basis for adaptive management. Several definitions should be clarified. A *performance measure* is a biological or environmental condition, e.g., survival or dissolved oxygen, which, when measured, indicates success or failure in advancing toward some specified objective or performance standard, e.g., 95% survival or 20% dissolved oxygen. For example, in the draft Mid-Columbia Habitat Conservation Plan (HCP), one key performance measure is smolt survival passing a dam. The parties participating in the HCP have specified the performance standard as 95% smolt survival. Other performance measures and associated standards may emerge from the National Marine Fisheries Service's and Fish and Wildlife Service's long-term biological opinions or from regional analytical forums such as Plan for Analyzing and Testing Hypotheses (PATH), Cumulative Risk Assessment or Ecosystem Diagnosis and Treatment (EDT).

Performance measures and standards are a valuable way to prioritize actions and assess progress toward clearly stated recovery or mitigation objectives. Bonneville recommended that the Council include recovery and/or mitigation objectives, performance measures and performance standards in its fish and wildlife program. For example, the fish and wildlife program's biological objectives might include numbers of adult anadromous and resident fish produced and relative proportions of wild, hatchery, or supplementation fish in any particular watershed or stream reach. In addition, performance measures and standards should be consistent with those under development by the Federal Caucus as outlined in its draft "Conservation of Columbia Basin Fish -- Building a Conceptual Recovery Plan." Performance measures and standards should be developed and applied, recognizing that their application across all four "Hs" will affect a variety of state, federal and tribal jurisdictions. The integrated approach of performance standards across all life stages and all H's is necessary to ensure continuity of population rebuilding and recovery strategies, connectivity of habitat and proper functioning of ecosystem processes,

and ultimately, the population level performance necessary to lead to rebuilding and recovery. The integrated approach also provides the opportunity to best allocate available resources to achieve the greatest potential benefit to fish and wildlife.

Finding: The Council adopted an approach to biological objectives consistent with this recommendation, including the points made in Bonneville’s recommendation about what the substantive categories of objectives should be, their scope and what they should cover, and the possible sources of information underlying objectives. The Council recognizes the need for frequent, on-going consultation and collaboration with the federal agencies to ensure consistency between the performance standards and measures established or called for in the biological opinions and recovery strategy and the Council’s program, while recognizing the different responsibilities of the Power Act and the Endangered Species Act. The Council also concluded that, at this point in the program revision process, the basinwide biological objectives the Council adopted are consistent with the similarly few performance standards and measures the federal agencies included in their ESA documents.

The only thing the Council did not do was change its terminology to match that of the federal agencies. The Council has been working with the term “biological objectives” and developing the concept for years in the framework development process; it is a term used in Section 4(h) of the Power Act; the Council used the term in the guidance that went with the request for program amendment recommendations, and the term carries with it a common sense understanding that generally matches its function within the program. For these reasons, the Council chose to continue using the term in the revised program.

Source:	U.S. Geological Survey and Confederated Tribes of the Colville Reservation
Recommendation No.	22
Source:	Environmental Protection Agency
Recommendation No.	32

Recommendation: The Geological Survey and the Colville Tribes recommended that it is critical for the fish and wildlife program to include water quality considerations and goals within its framework at multiple scales. The Environmental Protection Agency similarly recommended that the Council adopt specific water quality goals that are consistent with federal, state, and tribal water quality standards. These goals should apply to implementation throughout the tributaries and the mainstem.

Finding: Consistent with this recommendation, the Council adopted basinwide biological objectives regarding water quality in general. Section III.C.2.b and Appendix D. The Council expects that later phases of the program amendments process will bring more specific water quality objectives into the program at various levels. Other sections of the revised program, especially the hydrosystem strategies (Section III.D.6) and subbasin planning provisions (section V), also discuss the need to integrate planning and implementation of the program with water quality planning and implementation under the Clean Water Act.

Source: Public Power Council
Recommendation No. 52

Recommendation: The Public Power Council recommended the development and use of biologically based performance standards. This would be the single most promising way to integrate the best available science with a more effective way to improve the contributions of the region's organizations and institutions. Use the best available science to allocate mortality by life stage linked to institutional responsibilities in each sector of society. Each party should understand what tools are available and what the priorities are for each tool. Biologically based performance standards by life stage and human institution can help accomplish this. Chapter Four of the "Multi-Species Biological Assessment of the FCRPS" provides an excellent introduction to standards. The Public Power Council strongly supported a continued effort to lay out, in as much detail as possible, the concept of biologically based performance standards, the opportunities for each human institution in addressing these standards, and the consequences of meeting or not meeting the assigned standards. Research goals should also be incorporated, designed to provide significantly improved information for future use with performance objectives and standards.

The Public Power Council then recommended the following general comments regarding the use of performance standards:

- Use a standard we can all understand. A biologically based performance standard should be expressed for each target species in units that policy makers and the public can understand, such as the "spawning escapement" or number of adult salmon that show up to spawn. It doesn't make sense to use a ratio that only the dueling scientists understand.
- Use a consistent standard for all Hs. Set performance standards for each H and/or life stage using a comparable conceptual basis. For example, if NMFS elects to set a theoretical standard or goal for the hydro system based on "natural river" conditions, NMFS should agree ahead of time to use the same standard for every other H. It would be inappropriate to set the standard at something akin to "pristine" for one H and "what is doable" for another H. Since the hydro biological opinion will be issued separately from opinions on the other H's, and different staff will draft these other opinions, NMFS should think carefully about the precedent it sets when determining the performance standards for the different H's.
- Use the best available science to set initial performance standards and targets. For instance, the NMFS' Cumulative Risk Initiative results specifically suggest where the best opportunities are to recover fish runs.
- Assign clear responsibility to agencies and then demand accountability from them.

The Public Power Council also recommended guidelines for setting biological standards:

- Consider the entire life cycle and ecosystem in which the fish and wildlife reside.
- Ensure that action taken has measurable results.
- With regard to naturally spawning fish and wildlife populations:
 - Set escapement objectives for fish by population per watershed.
 - Use larger salmonid metapopulations as the level of genetic organization to be conserved.
 - Give emphasis (top priority) to protecting and expanding existing healthy core populations.
 - Give a lower priority to extremely weak or functionally extinct populations.
 - Give greater emphasis to geographic areas with the greatest numbers of native species.
 - Emphasize geographic areas with the highest potential for increasing numbers of naturally spawning fish.
 - Focus greater emphasis on areas of the salmonid ecosystem that have not traditionally received much attention (e.g. estuary/ocean).
 - Ensure adequate natural spawner escapement to streams.

- Protect existing high quality habitat and improve degraded habitat.
- Minimize the impact of the hydro system on fish and wildlife populations, including passage of anadromous fish downstream and upstream.
- With regard to a sustainable, viable commercial and sport fisheries:
 - Utilize production/harvest regimens that minimize impacts on naturally spawning populations, including mixed stock conflicts.
 - Implement region-wide and international management of harvest, including ocean harvest.
- Apply management actions in a way that balances wildlife, anadromous and resident fish interests.

Finding: The Council defined and intends to use biological objectives in a way that is consistent with this recommendation. Most of the substantive concepts in the guidelines for biological standards recommended by the Public Power Council can be matched with similar concepts in the basinwide biological objectives, the planning assumptions, or the habitat, production and other strategies adopted by the Council. The Council did not precisely match the Public Power Council in terms of stating the priorities of the program and in expressing the program’s relationship to harvest management. These differences are explained in more detail elsewhere, in the findings on the recommendations for the vision and planning assumptions above and on the harvest and production recommendations below. To the extent the Council did not accept aspects of this recommendation, the Council finds that the recommendation would be less effective than what the Council adopted in the protection, mitigation and enhancement of anadromous fish, resident fish and wildlife, Northwest Power Act §4(h)(7)(C), and that the recommendation does not complement the activities and recommendations of the region’s fish and wildlife agencies and tribes as well as what the Council adopted, §4(h)(6)(A), (7)(B).

Source: **Public Utility District No. 1 of Chelan County**
Recommendation No. **4**

Recommendation: The Chelan County PUD responded to language in the biological objectives section of the Council’s Strawman with these recommendations: The concept that “viable anadromous fish populations should maintain abundance even during poor ocean conditions” has problems: How will “abundance” be quantified? In periods of poor ocean conditions survival will be different from periods with good ocean conditions. For a non-listed species, does this mean that a species will be managed to avoid listing or to withstand a certain level of human-caused mortality? For a listed species, does this mean management to achieve recovery?

How is a biological objective to “redirect present restoration efforts, which focus almost exclusively on weak remaining satellite populations” be possible when a species is managed under the Endangered Species Act? How will this objective and the objectives of the ESA be reconciled? It appears that the two define mutually exclusive goals.

A population productivity objective seeking a natural return ratio at 1.0 or higher without regard to species or population may not be realistic to achieve depending upon the species or population.

Finding: The Council adopted this recommendation by rejecting the language and concepts found in the Strawman that concerned the PUD.

Source: Idaho Water Users
Recommendation No. 18

Recommendation: The Idaho Water Users recommended that biological objectives expressing flow concepts be placed in context with historical patterns of flow and viable management options that benefit listed species. Rather than focusing on a “natural hydrographic pattern in terms of quantity, quality and fluctuation,” the program should concentrate on management of human activities (e.g., harvest) that have a demonstrated benefit to listed species while realizing the practical limits of the system, balanced with resident species, and human impacts. In most of the Columbia River tributaries, hydrographic characteristics are driven primarily by natural patterns. This is especially true of the upper Snake River where there has been no significant change in the total amount or seasonality of flow. Moreover, flow augmentation from portions of the basin such as the upper Snake River are futile attempts to change the velocity, temperature and turbidity downriver or in the estuary.

The program’s goals and objectives must reflect a balance of economics and ecology in a manner consistent with the physical, legal and political realities. Balance and consistency with reality can be achieved by applying standards of cost effectiveness and biological effectiveness to management options.

Finding: The Council rejected this recommendation by adopting, at least provisionally, the biological objective of allowing water to flow more than a present in the natural hydrographic pattern, in terms of quantity, quality and fluctuation, subject to further review by the Independent Scientific Advisory Board. Sections III.C.2.b, Appendix D. Most of the recent scientific literature supports establishing such an objective, if the goal is protecting and improving the habitat conditions needed by naturally spawning, rearing and migrating fish populations. Moreover, this objective is consistent with the recommendations of the fish and wildlife agencies and tribes and others. If the Water Users are correct in their assertion that the present hydrographic profiles in most of the tributaries, and especially the Snake, are driven primarily by natural patterns, and that flow augmentation is a deviation from natural patterns that has been futile in changing key habitat characteristics of the river, then it seems to the Council that the biological objective adopted by the Council is *consistent* with and will serve the Water Users’ central point.

The program is consistent with the second point in the recommendation: The program’s vision, and the requirements for developing and implementing the program, balance economics and ecology and, especially, require the application of cost effectiveness standards. *See, e.g.,* Northwest Power Act, §4(h)(6)(C), (10)(D). The cost-effectiveness concepts are not written into the biological objectives, which describe the types of ecological conditions desired. Cost effectiveness is considered instead in the deciding what specific measures to adopt into the program to achieve these objectives and, especially, whether projects proposed for funding employ cost effective means to achieve the objectives.

Source: Northwest Irrigation Utilities, Columbia-Snake River Irrigators Association, Eastern Oregon Irrigators Association
Recommendation No. 25

Recommendation: The biological objective for the recommended “New Water Management Alternative for the Columbia River Basin” is to increase the number of returning adult salmon and steelhead -- both natural and hatchery supplementation stocks -- within individual tributaries and watersheds. The specific objective is returning adult fish to site-specific areas of the basin that have a reasonable probability of being enhanced via water management actions. The measure of returning adult fish must take into account changing inland climate and ocean conditions, as well as any other direct

habitat measures that could be taken to improve fish runs. This means that adequate monitoring and evaluation must be undertaken to ensure that measurable fish benefits are verified. At this time, the objective is to increase fish numbers for specific areas, but no set target or unit levels are recommended. Target levels may be established in the future given more experience with water management operations and other habitat improvement actions.

Finding: Consistent with this recommendation, the Council adopted interim biological objectives that, among other things, seek to increase the abundance of returning adult salmon and steelhead. Section III.C.2 and 2.a.1. The monitoring and evaluation provisions of the program are linked to the use of the objectives to verify fish benefits. Sections III.C.4, III.D.9 (monitoring and evaluation). The Council did not seek, in the basinwide reorganization of the program, to set objectives for specific areas; recommendations and program amendments for that purpose are still to come. Sections III.C.3, IV.B, V.A.5, VIII

Source: Inland Ports and Navigation Group
Recommendation No. 49

Recommendation: The Inland Ports and Navigation Group recommended the use of performance standards for life-stage survival. Hypotheses lacking research and testing about their potential effects should not be embraced in interim performance standards. The Council's program must not establish such high and unreachable benchmarks for the alternatives to dam breaching that the result will be dam breaching becoming the default alternative after five or ten years. A focus on performance standards that provide an impossible task for the rest of the Hs does the region a disservice, and will lead to more regional bickering, and to probable litigation by those entities who see through the artifice of such a plan.

Finding: The program is consistent with this recommendation. The Council adopted interim objectives for biological performance consistent with the recommendations of fish and wildlife agencies and tribes, subject to review and reconsideration after completing the specific plans for the mainstem and subbasins. Section III.C.2.a. The Council did not adopt these with the understanding or intent that they are high or unreachable or that they must inexorably lead to decisions to breach dams.

Source: Sierra Club -- Columbia Basin Field Office
Recommendation No. 27
Source: Save Our Wild Salmon
Recommendation No. 29

Recommendation: The Sierra Club and the Save Our Wild Salmon coalition recommended the following biological objective for "reproductive success": Productivity of all fish and wildlife should reach population replacement in all years, and for declining species, population increase in most years. For anadromous fish specifically, stocks of salmon and steelhead should achieve a smolt-to-adult survival ratio of 2 percent in all years, and 4-6 percent in most years. Save Our Wild Salmon added that smolt-to-adult ratios for up- and down-river stocks should be equivalent in all years to ensure that up-river stocks (i.e., Snake River stocks) needs are not inadvertently masked by improvements in down-river stocks.

Both groups recommended the following objective for "habitat": The program should result in healthier, more diverse, more productive, and better connected habitats for fish and wildlife. Save Our

Wild Salmon added that healthier, more diverse, more productive, and better connected habitats for fish and wildlife, includes, but is not limited to, developing 250-300 foot riparian buffers in all fish bearing and rearing streams; developing buffers on non-fish bearing streams to provide clean water and control flooding; maintaining temperatures of not more than 20 degrees Celsius throughout salmonid ranges; and increasing connectivity within the ecological system.

Finding: The Council did not adopt the specific objectives recommended. But for the reasons that follow, the Council concludes that the recommended objectives are not necessarily inconsistent with the substance of what the Council did adopt. As discussed above, in this phase of the program amendment process the Council decided on a consistent and fairly general level of detail for the basinwide principles and objectives, and so it gleaned from the recommendations biological objectives at that level of detail. The Council decided not to include at the basinwide level at this time more detailed or specific objectives and sub-objectives concerning the population and environmental characteristics. It is *not* that the Council disagrees with or believes that these recommended objectives are incorrect or inconsistent with what the Council did adopt; the Council concludes to the contrary that nothing the Council adopted is necessarily inconsistent with the detail of these recommendations. Later phases of the amendment process will provide opportunity to incorporate more detailed objectives into the program, especially at the finer geographical levels such as subbasins, but also at the basin level. *See* Sections II.B, II.C, III.C, IV.B, V.A.5, VIII, Appendix D.

On this basis, the Council adopted general biological objectives seeking to protect and increase the productivity of fish and wildlife, consistent with these recommendations, with aggregate short-term and longer-term productivity and abundance objectives for salmon and steelhead based on recommendations and comments from the fish and wildlife agencies and tribes. Section III.C.2 and 2.a.1. The Council expects to adopt specific objectives for populations in subbasin plans, in the mainstem plan and in provincial objectives, including productivity objectives. These will be the place for more specific objectives such as smolt-to-adult ratios for populations of interest. Sections III.C.2, III.D.6, IV.B, V.A.5. It is unclear why smolt-to-adult ratios for upriver and downriver stocks must necessarily be equivalent -- the program will establish specific objectives for specific populations that are consistent with the specific needs of those populations to increase abundance, productivity and diversity to sustainable levels. There is no reason that improvements in one population's population characteristics should mask whether other populations are showing improvements.

Similarly, the Council did adopt the recommended objective of healthier, more diverse, more productive, and better connected habitats for fish and wildlife, as can be seen in the vision, the planning assumptions, the biological objectives for environmental characteristics and the habitat strategies. The Council also adopted provisional basinwide objectives to increase connections between productive habitats and between aquatic, riparian, floodplain and upland areas; to manage riparian areas to protect aquatic conditions; to increase the correspondence between water temperatures and naturally-occurring temperature regimes under normal hydrographic patterns; and so forth. Section III.C.2.b and Appendix D. More specific objectives for the size of riparian buffer zones or specific temperatures in a stream reach should be established, where needed, in the phases of the program amendment process that follow subbasin assessments and bring subbasin plans and the mainstem plan into the program. *See, e.g.,* Section V.A.5 (integrating Clean Water Act requirements into subbasin plan objectives and management strategies).

3(c) Strategies/implementation standards (basin level)

3(c)(i) Habitat strategies/general implementation strategies and standards in a habitat-based program

Source:	Oregon Department of Fish and Wildlife
Recommendation No.	26
Source:	Spokane Tribe
Recommendation No.	28
Source:	Colville Confederated Tribes
Recommendation No.	33
Source:	Burns-Paiute Tribe
Recommendation No.	34
Source:	Shoshone-Bannock Tribes
Recommendation No.	38
Source:	Coeur d'Alene Tribe
Recommendation No.	42
Source:	U.S. Fish and Wildlife Service
Recommendation No.	46
Source:	Kalispel Tribe
Recommendation No.	48
Source:	Kootenai Tribe
Recommendation No.	50

Recommendation: These fish and wildlife agencies and tribes recommended different edited versions of language in the Council's Strawman describing the possible role of "strategies" in the revised program. The recommendations are different versions of the following from the Spokane Tribe:

Strategies are plans of action to accomplish the objectives and thereby fulfill the vision. Since most of the specific actions will be addressed at the subbasin level, most of the strategies will be developed there. However, it is important that the strategies at the provincial and subbasin levels be consistent with basin-wide standards, guiding actions toward the basin objectives and vision stated above and the scientific foundation. Implementation standards are intended to provide pragmatic guidance to decision-makers. Strategies are also needed at the basin level to address areas of the program that transcend one or more of the provinces, such as ocean and in-river harvest, hydrosystem structure and operation, data management, research, monitoring and evaluation.

Finding: The Council adopted the substance of these recommendations in the way the program defines and uses "strategies." See Sections II.C, III.A, III.D and D.1.

Source:	Columbia River Inter-Tribal Fish Commission
Recommendation No.:	40

Recommendation: The Commission recommended restructuring the section on strategies/standards as follows:

Implementation Standards and Strategies

- Harvest
- Hydropower

- Production
- Habitat
- Coordination of Implementation, Research, Monitoring and Evaluation

The Commission also recommended that the key to accomplishing the tribal vision for basinwide anadromous fish restoration is achieving survival rates for each life history stage that are expressed by the tribal strategies in *Wy-Kan-Ush-Mi Wa-Kish-Wit*. The adaptive management of different strategies and actions as scientific knowledge increases is also an important element to realizing the tribal vision.

Central strategies should include:

- Emphasize healthy rivers and watersheds with abundant and diverse species assemblages and their management, maintenance and restoration, with particular attention to ecosystem diversity, productivity and stability.
- Emphasize natural production provided by such rivers and watersheds.
- Reintroduce and restore anadromous fish to the rivers and streams that historically supported them, in numbers sufficient to provide for the needs of the ecosystem and people, in perpetuity.

Finding: The Council adopted the concepts underlying this recommendation. The Council added two strategy categories (Wildlife and Ocean Conditions), but otherwise agreed with the categories recommended by the Commission. The central strategies recommended by the Commission are represented in the program in various ways in the vision, the planning assumptions, the biological objectives, the linkage between objectives and strategies, and the habitat and production strategies.

Source: National Marine Fisheries Service
Recommendation No. 54

Recommendation: NMFS recommended that it was most appropriate to develop specific strategies or plans of action for hatchery and habitat activities at the subbasin level. At that level, refined scientific assessments should be available, risks and opportunities can be identified, and local stakeholders' objectives and management systems can be coordinated and applied. For strategies related to the hydropower system, however, strategies should be developed for the entire Federal Columbia River Power System, as well as for specific projects and reservoirs. NMFS also recommended strategies are needed at the basin scale for subbasin assessment and subbasin plan templates and for data management, research, monitoring, and reporting.

Finding: The Council adopted this recommendation. The Council adopted general strategies and implementation standards at the basin level to help guide the decisions on specific hatchery and habitat activities at the subbasin level. The Council did not interpret NMFS' recommendation as opposing that approach.

Source: Spokane Tribe
Recommendation No. 28

Recommendation: The Spokane Tribe recommended that the Council maintain the policy in past programs of attempting to balance the needs of resident fish and wildlife with anadromous fish, so that the program does not become merely another anadromous salmon recovery plan. The tribe also

recommended generally retaining existing strategies in the existing 1994-95 Fish and Wildlife Program until subbasin plans are in place.

Finding: The Council adopted this recommendation.

Source:	Oregon Department of Fish and Wildlife
Recommendation No.	26
Source:	Spokane Tribe
Recommendation No.	28
Source:	Montana Fish, Wildlife and Parks
Recommendation No.	31
Source:	Colville Confederated Tribes
Recommendation No.	33
Source:	Burns-Paiute Tribe
Recommendation No.	34
Source:	Idaho Department of Fish and Game
Recommendation No.	36
Source:	Shoshone-Bannock Tribes
Recommendation No.	38
Source:	Coeur d'Alene Tribe
Recommendation No.	42
Source:	Washington Department of Fish and Wildlife
Recommendation No.	43
Source:	U.S. Fish and Wildlife Service
Recommendation No.	46
Source:	Kalispel Tribe
Recommendation No.	48
Source:	Kootenai Tribe
Recommendation No.	50
Source:	Umatilla Tribes
Recommendation No.	41

Recommendation: A number of the fish and wildlife agencies and tribes provided similar or overlapping sets of recommendations for general implementation strategies and standards. Differences among the recommendations are noted, although the differences were not substantive so much as a matter of how many points were included.

Protection, mitigation, and enhancement measures should:

- Be the least-costly way to achieve the biological objective. (This standard was not in the recommendations from Oregon, the Fish and Wildlife Service or the Umatilla Tribes.)
- Have measurable objectives. (This standard was not in the recommendations from Oregon or the Umatilla Tribes.)
- Protect high quality habitat or species of special concern, whether at the project site or not, including endangered, threatened or sensitive species. (The Colville Tribes added “or species supporting important fisheries.”)
- Help protect or enhance natural ecosystems and species diversity over the long term. (The Umatilla Tribes did not include this standard.)

- Encourage the formation of partnerships with other persons or entities, which would reduce project costs, increase benefits and/or eliminate duplicative activities. (Neither Oregon nor the Umatilla Tribes included this standard.)
- Complement the activities of the region's state and federal wildlife agencies and Indian tribes. In particular, state clearly how plans or projects would complement agency and tribal policies or programs to protect, mitigate, or enhance healthy ecosystems and species diversity over the long term. (Oregon and the Umatilla Tribes did not include the second sentence.)
- Not impose on Bonneville the funding responsibilities of others, as prohibited by Section 4(h)(10)(A) of the Northwest Power Act. (This standard was not in the recommendations from Oregon, Idaho, the Fish and Wildlife Service or the Umatilla Tribes.)

Washington, Idaho and the Spokane, Coeur d'Alene, Kalispel and Kootenai Tribes added:

- Provide habitat that can provide dual benefits for both fish and wildlife whenever possible.

Oregon and the Umatilla Tribe similarly recommended:

- Mitigation programs should provide riparian or other habitat that can benefit both fish and wildlife.

The Colville Tribes added:

- Provide direct on-the-ground benefit to fish and wildlife populations.
- Provide for subsistence, ceremonial and recreational opportunities.

Oregon and Idaho added:

- Losses should be mitigated in-place, in-kind. The Habitat Evaluation Procedures Relative Value Index should be used for out-of-kind wildlife mitigation. (Oregon added that mitigation should be implemented within the subbasin where losses occurred.)
- Mitigation programs should address concerns over additions to public land ownership and impacts on local communities, such as reduction or loss of local government tax base, special district tax base or the local economic base.
- Mitigation programs should provide permanent protection of habitat through fee-title acquisition, conservation easement, lease and/or management plans.
- Mitigation programs should provide permanent habitat protection through secure operations and maintenance funding over the life of the project.

Finding: The Council adopted provisions consistent with these recommendations, spread in various places throughout the program. For a couple of examples, the recommendation that mitigation programs provide protection of habitat through fee-title acquisition, conservation easement, lease or management plans is built into the provisions adopted for a land and water acquisition fund and also stated in the wildlife strategies. Section III.D.7, VI.A.8. The land and water acquisition implementation provisions also contain a provision responsive to the recommendation from Oregon and Idaho concerning the impacts on local communities of additions to public land ownership. Section VI.A.8. The bulk of these recommendations relate to the protection and enhancement of habitat and ecosystems for multi-species benefits, and they have been addressed above, *see also* Section III.D.7, as have the recommendations calling for the program goals to include providing harvest opportunities, which include subsistence, ceremonial and recreational benefits.

Some of the recommendations called for the Council to restate in the program a set of legal obligations in the Power Act -- measures must be the least-costly way to achieve biological objectives; complement the activities of the agencies and tribes; not impose "in lieu" costs on Bonneville. The

Council did not include a statement of legal principles from the Act. An intent to be consistent with the Act is implicit in the adoption and implementation of the program.

Source: Shoshone-Paiute Tribes
Recommendation No. 23

Recommendation: The Shoshone-Paiute Tribes recommended the following strategies generally for mitigation activities:

- Afford highest priority in areas of the basin affected by mining activities.
- Protect high quality native habitat and attempt to restore potential habitat to benefit fish and wildlife.
- Mitigate for lost botanical resources due to the construction and operation of the federal hydropower system.
- Base mitigation on historical populations, potential harvest of fish and wildlife, as well as loss of habitat and species of fish and wildlife, not actual current populations of species present.

Finding: The Council adopted provisions consistent with the substance underlying the tribes' recommendation, with these exceptions: The Council did not adopt the recommendation to afford highest priority to areas affected by mining activities. There was no indication in the scientific literature or in the recommendations and comments of others that addressing the effects of mining is the activity that would, as a basinwide proposition, yield the greatest benefits to fish and wildlife affected by the hydrosystem. It may be that addressing the effects of mining in certain subbasins may be the most cost-effective off-site mitigation for improving the conditions of one or more fish or wildlife populations affected by the hydrosystem. It is at the scale that the particular effects of mining should be assessed and addressed. The Council finds that the recommendation would be less effective than what the Council adopted in the protection, mitigation and enhancement of anadromous fish, resident fish and wildlife, Northwest Power Act §4(h)(7)(C), and less consistent than what was adopted with the recommendations and activities of the other fish and wildlife agencies and tribes in the region, §4(h)(6)(A), (7), (7)(B).

To the extent that the tribe intended its recommendation to mitigate for lost botanical resources to be a goal separate from protecting, mitigating and enhancing fish and wildlife, this would be outside the scope of the Council's authority under the Power Act. The Council chose to treat this recommendation as consistent with what became a main focus of the recommendation and the program -- that this is a habitat-based program, in which the aim is to rebuild healthy, naturally producing fish and wildlife populations by protecting, mitigating, and restoring habitats and the biological systems within them, which includes the botanical resources on which they depend.

Source: Spokane Tribe
Recommendation No. 28

Recommendation: The Spokane Tribe recommended that funding for habitat acquisitions should go only to governments, not to private entities. Private ownership (of, for example, game preserves) is inconsistent with the goals and objectives of the basin's governmental fish and wildlife managers.

Finding: The Council did not adopt this recommendation. The Council called for the creation of a fund for land and water acquisitions for habitat that would accept proposals for funding of acquisitions, specifying that the fund itself would not take title to acquisitions but instead would work “to identify an appropriate entity to hold the interest acquired.” The history and current practical realities of the program indicate that governments and non-profit acquisition trusts (such as the Nature Conservancy or Oregon Water Trust) will be the main participants in arranging acquisitions under this fund, and that in all or nearly all cases the title to these acquisitions will end up with a state, federal or tribal government. But it is possible to imagine a situation in which it makes the most sense, to make an important acquisition happen, to fund a non-profit entity, for example, not just to facilitate the transfer but also to hold title to the acquisition, especially for a certain period of time. Adopting a more restrictive policy would serve purposes other than protecting, mitigating and enhancing fish and wildlife, and thus would not be within the scope of the program under the Power Act. It is unlikely, however, that funding a private entity to acquire and hold a private game preserve would qualify as appropriate mitigation under the Act or the program.

Source: Columbia River Inter-Tribal Fish Commission
Recommendation No.: 40

Recommendation: The Commission recommended the following set of general habitat strategies. For convenience, a finding follows each section or recommended strategy:

The Commission summarized its habitat recommendations and strategies as follows:

New directions are proposed

- to protect and restore habitat throughout the geographic range of anadromous fish,
- to enforce existing laws that protect habitat,
- to investigate and address water quality issues, and
- to acquire land, water rights, and easements.

Finding: The Council adopted a vision, objectives and strategies consistent with the directions recommended by the Commission, with the exception of a strategy concerning the enforcement of existing laws. The Council believes that law enforcement *tasks* associated with and incidental to activities funded under the program, such as protecting habitat investments, and which do not present an “in lieu” funding issue under Section 4(h)(10)(A) of the Power Act, are within the scope of the Power Act and thus appropriate for the program to consider in implementation. This is not the same as a general program role in the enforcement of existing laws to protect habitat.

Mainstem and tributary habitat strategies

- Protect critical estuary habitat and restore former estuary habitat.

Finding: The Council adopted this recommendation. Section III.C.2.b and Appendix D (objective #7), Section III.D.3 (fifth habitat strategy).

- Designate the Hanford reach of the Columbia River under the federal Wild and Scenic Rivers Act, and re-establish normative river conditions there.

Finding: The Council adopted provisions that are consistent with, if more general than, the recommendation. The Council adopted, provisionally, a biological objective calling for the protection of

the habitat conditions and ecological functions in areas that are at present relatively productive, specifically naming the Hanford Reach. Section III.C.2.b and Appendix D (first objective). The Council also called, more generally, for strategies to protect and enhance mainstem spawning and rearing habitats, which include the Hanford Reach area, and for mainstem hydrosystem operations to be directed at re-establishing natural river processes where feasible, Sections III.A.1, A.2, III.D.6. Specific strategies to protect the Hanford Reach should be recommended during the program amendment processes at finer geographic scales.

- Stop ignoring superior tribal reserved instream water rights; fully recognize and honor them.

Finding: The program recognizes and preserves both treaty rights and existing water rights, including tribal water rights, *see* Section VII, as required by the Power Act, §§ 4(h)(6)(D), 10(e), (h). Whether tribal reserved water rights can serve in specific instances as an implementing tool for furthering the objectives of the program will be up to the tribes and the Council to define in later stages of the program revision process.

- Improve water quality in the mainstem Columbia and Snake Rivers by reducing or eliminating toxic pollution sources and other contaminant discharges in compliance with applicable water quality criteria (at a minimum).

Finding: The Council did not adopt such a specific water quality objective or strategy; what the Council did adopt is consistent with the Commission's recommendation, however. The Council adopted a program vision and policy direction stating that the goal of rebuilding fish and wildlife populations depends on protecting, mitigating and restoring the habitat conditions and ecological functions that support these populations. Section III.A.1, A.2. Water quality is one of the key habitat attributes. The Council also adopted, provisionally, basinwide biological objectives for the protection and improvement in aquatic and riparian habitat and ecological functions, which include water quality; stating that habitat restoration may be framed in the context of measured trends in water quality; calling for water quality conditions that tend more toward the water quality that would exist under a natural hydrographic pattern; and so forth. Then the Council included subbasin planning provisions calling for assessments and for objectives and actions in the plans to address water quality considerations and to integrate planning and implementation of this program with water quality planning and implementation under the Clean Water Act. *See* Sections III.C.2.b and Appendix D; V.A.3 and A.5. The program will include more specific water quality objectives and strategies at the finer geographic scale. The subbasin planners will need to assess what water quality conditions and standards exist in their area of reference and how to address them.

- Adhere to and enforce all applicable tribal, state and federal laws and regulations (including water quality standards, discharge permits and fish and wildlife passage and screening requirements), strengthen them where needed, and develop incentives and cost-sharing programs to assist in their implementation.

Finding: With regard to the recommendation to *adhere* to laws and regulations in the implementation of the program, the Council expects those who implement the program to comply with all applicable federal state and tribal laws and treaty obligations. The Council did not include this point in the revised program, as compliance with the law is an automatic and underlying obligation. As explained above, the Council did not adopt a general strategy concerning law enforcement. Law enforcement *tasks* associated with and incidental to activities funded under the program, such as protecting habitat investments, and which do not present an "in lieu" funding issue under Section 4(h)(10)(A) of the Power Act are within the scope of the Power Act and the program, and thus may be part of specific

implementation strategies. This is not the same as a general program role in the enforcement of existing laws. With regard to water quality standards, *see* the finding immediately above.

- Stop government programs and subsidies that allow or promote new development or replace existing development in sensitive floodplains and other areas.

Finding: The Council adopted a more general objective that is consistent with the substance of this recommendation. The Council adopted, provisionally, biological objectives to protect and restore aquatic areas, riparian zones and floodplains and to increase the connections between these areas. Section III.C.2.b and Appendix D (second objective). Specific actions recommended during the planning and implementation at the finer geographic scales to implement these objective might very well include an end to government programs and subsidies that promote new development in areas where these activities are having an adverse effect on floodplains and riparian areas.

- Establish, in coordination with the International Joint Commission, a transboundary Watershed Board to examine, coordinate and improve management of basin water quantity and water quality.

Finding: Consistent with the substance of this recommendation, if more general, the Council adopted general objectives and strategies concerning water quality and quantity, as discussed above and immediately below, and a general habitat strategy calling for ecosystem restoration efforts to address transboundary species and habitats. Section III.D.3 (sixth habitat strategy).

- Protect, enhance, rehabilitate and restore instream flows and conditions and overall watershed health and productivity, including:
 - issue no new water rights and limit additional consumptive water withdrawals that would negatively impact instream flows;
 - acquire water rights and conservation easements on adjacent private lands;
 - monitor existing water withdrawals and halt all unauthorized, not permitted or otherwise illegal withdrawals or uses;
 - maximize irrigation efficiency and accountability, and decrease out-of-stream water withdrawals;
 - mandate appropriate water conservation measures to reduce out-of-stream demands for water;
 - eliminate federal and state government subsidies that encourage, promote and sustain otherwise uneconomic agricultural and other economic activities;
 - prevent damage to and destruction of riparian vegetation by fencing and other means, such as purchasing grazing permits and restore impacted riparian areas;
 - prevent further degradation and destruction of wetlands and restore impacted wetland areas;
 - improve or eliminate land use activities and practices that degrade water and watershed quality;
 - connect fragmented habitat; and
 - eliminate introduction of new exotic species; control populations of existing exotic species.

Finding: The Council adopted a number of objectives and strategies consistent with this recommendation, but in most cases more generally stated. Thus the program calls protection and restoration of riparian and aquatic areas, for the connection of fragmented habitat, for habitat restoration through actions that improve water quality, for the management of water in the tributaries and mainstem so that water moves more than at present toward the natural hydrograph in terms of water quantity and fluctuations, for a fund to acquire water rights and conservation easements, and for an emphasis on protection and improvements in the conditions of native species and away from exotic species. Sections III.C.2.b and Appendix D, III.D.2, III.D.3, VI.A.8.

- Use the “Coarse Screening Process” (or other similar methods), where applicable, to establish baseline habitat standards and conditions that land and water users and managers must meet which limit watershed impacts to maintain and improve fish and wildlife habitat. Establish pre-development baseline information and restore and/or mitigate to pre-development conditions.

Finding: Consistent with the general recommendation to establish baseline habitat standards, the Council adopted provisions calling for watershed and subbasin assessments that describe habitat conditions and trends, Section V.A.3, and for subbasin plans and for program objectives and strategies that describe the actions needed to maintain and improve those habitat conditions for fish and wildlife, Sections III.A.1 and A.2, III.C.2.b and Appendix D, III.D.2, III.D.3 (including primary strategy to “[i]dentify the current conditions and biological potential of the habitat, and then protect or restore it to the extent described in the biological objectives”), V.A.5.

The Council did not adopt the objective of restoring or mitigating to “pre-development conditions.” As explained above in response to similar recommendations from the Commission with regard to the program vision, the strategies and objectives in the program are focused on achieving and sustaining habitat conditions that allow for an abundant, productive, and diverse community of fish and wildlife, mitigating across the basin for the adverse effects to fish and wildlife caused by the development and operation of the hydrosystem and providing the benefits from fish and wildlife valued by the people of the region, to be accomplished where feasible by protecting and restoring the natural ecological functions. This is not the same as calling for the restoration of pre-development conditions. The Council’s responsibility under the Power Act is to develop a program that mitigates for the effects of the development and operation of the hydrosystem on fish and wildlife, not for the adverse effects of all development in the region, which go well beyond the damage related to the hydrosystem. Moreover, the Power Act directs the Council to plan for protection and mitigation, not restoration to pre-development conditions.

Source: Columbia River Inter-Tribal Fish Commission
Recommendation No.: 40

Recommendation: The Commission then recommended an additional set of habitat goals, principles and policies, in an edited version of portions of what was Section 7 of the existing fish and wildlife program, summarized as follows:

In order to realize the vision of a long-term, self-sustaining and diverse freshwater community dominated by salmon and steelhead in all Columbia River anadromous zone subbasins, it is imperative to restore and protect all habitats upon which these species depend from their natal streams and rearing areas to the ocean. Currently this habitat system is widely degraded and fragmented, thereby limiting salmon productivity, distribution, and species and life history diversity. Many stocks are currently so weak and habitat solutions so difficult socially and time-consuming to achieve that extirpation is a likely outcome unless hatchery supplementation can be applied to sustain these stocks in the interim or unless other dramatic measures are enacted. Habitat degradation in the Columbia Basin has had a history of greater than 100 years in many streams due to numerous combined actions, primarily of man-caused development. Habitat restoration, likewise, cannot be accomplished immediately. Restoration operates on timelines that measure in decades. However, site-specific restoration studies that have been conducted across the basin have demonstrated that significant progress can often be made in a single decade, so that a significant boost in salmon production can be anticipated. This implies two things: habitat restoration must be initiated immediately in a geographically extensive manner and we must be willing to sustain

consistent levels of effort toward restoration and then protect the gains made over a period of many decades. It is the view of the Council that healthy, productive salmon populations that fully occupy historic habitat in the anadromous zone is not inconsistent or mutually exclusive with settlement of the basin. Rather, healthy fish habitat is an important barometer of the health of our watersheds, water quality, and ecosystems in general that society depends upon. An ecosystem approach to species recovery requires close coordination of habitat and production measures. Coordination should ensure that habitat and production measures are driven by the needs of specific populations and by the condition of the watersheds in which those populations live. Effective coordination should provide an opportunity to build on the energy and initiatives of local communities. This helps ensure that ratepayers get maximum return from their investments and makes the best use of the subbasin and system-wide plans prepared by the fish and wildlife agencies and Indian tribes.

Habitat goal: Protect and improve habitat conditions to ensure compatibility with the biological needs of salmon, steelhead and other fish and wildlife species. Pursue the following aggressively:

- Ensure human activities affecting production of salmon and steelhead in each subbasin are coordinated on a comprehensive watershed management basis.
- Maintain the present quantity and productivity of salmon and steelhead habitat. This is a basic, ongoing need that itself appears not to be met on a widespread level in the Columbia Basin. Without stemming the losses in habitat productivity through needed changes in land management, it will not be possible to fund habitat and watershed restoration projects on a vast enough scale to result in a net improvement in habitat conditions. The strategy of preventing additional net loss in habitat productivity in each subbasin and watershed is a strategy to maintain the viability of the remaining stocks whose populations may be depressed but stable or better.
- Improve the productivity of salmon and steelhead habitat critical to recovery of weak stocks.
- Enhance the productivity of habitat for other stocks of salmon and steelhead.
- Provide access to inaccessible habitat that has been blocked by human development activities.
- As a general rule, take all available opportunities to restore, protect, and conserve all historic habitat for anadromous stocks and non-anadromous resident fish stocks within subbasins supporting anadromous stocks as a means of improving productivity of stocks and the metapopulations as a whole to levels that will ensure persistence and also provide significant harvest opportunities.

Key habitat concepts and principles

- The habitat elements set as standards do not represent a comprehensive list of parameters that are useful for monitoring the effects of land management on habitat conditions and survival; they are a minimum set of habitat variables to be used to determine the need to alter land management practices based upon adaptive management to achieve consistency with providing habitat conditions conducive to salmon survival.
- Habitat elements are set as numeric standards only if all of the following criteria are met: a) research has consistently shown that the habitat variable strongly influences salmon survival and production; b) data indicate that the habitat variable has affected salmon survival and production; c) the preponderance of data indicates a linkage between land use activities and condition of the habitat variable; d) there is no viable land use standard that can be set to adequately assure that the condition of the habitat variable will be protected or improved; and e) some measurable change in the variable can be expected over time in response to changes in land management.
- Recognize that fish habitat is actually the entire environmental system for a species. Because the stream system is considered hierarchically, a stream reach, for example, has the entire upstream watershed as its environment. This watershed contributes water, sediment, large woody debris, chemical constituents, and thermal inputs to the reach in a temporal frequency characteristic of the stream class involved. The inherent characteristics of the watershed define hydrologic

characteristics that, along with watershed lithology, define channel morphology and substrate composition of the reach. Channel morphology for an unconstrained stream reach having a certain upstream drainage area and riparian vegetation type takes on a predictable bankfull width and depth.

- Some important concepts of fish habitat that have significance relative to restorative actions.
 - Fish habitat is not just riffles and pools. It encompasses a complex set of ecosystem processes and structures at various spatial and temporal scales. Implications of this include:
 - ✓ Restoration of fish habitat cannot be assumed to be accomplished by simply addressing a deficiency at a point. That is, high water temperature or levels of fine sediment can be modified to a limited extent by restoring riparian cover or improving streambank stability locally, but more effective controls are available by addressing these issues on a total stream system basis.
 - ✓ Adequacy of habitat for a species cannot be assessed simply by evaluating conditions at a stream reach. Salmon use habitat at a watershed scale during their freshwater life stages. Watersheds of approximately 4th to 6th order are logical production units. Actually, salmon use habitat from natal spawning grounds to the ocean and back, but the degree of migration within a watershed of the scales mentioned during early juvenile life stages makes this a good spatial basis for evaluating fish habitat.
 - ✓ A lack of large woody debris cannot effectively improve fish habitat simply by placing LWD in a stream reach if there are other unresolved problems in the watershed, such as elevated fine sediment, high water temperature, or elevated peak flows. Similarly, a lack of deep pools cannot be overcome by digging pools if elevated sediment delivery from the watershed is present. Long-term lack of LWD cannot be effectively addressed simply by cabling LWD in stream reaches because of the variable effectiveness of these structures in remaining in place. Also, permanent riparian reserves must be available to provide sustainable sources of natural LWD delivery.
 - ✓ Fish production and survival depend upon the conditions within stream reaches in which they are found. These conditions must be appropriate both instantaneously and also in their regimes (temporal patterns). In addition, the spatial organization of critical habitats within a watershed is important. For example, the instream distance to and availability of overwintering habitat has great significance for the survival of a salmon population rearing from emergence to emigration.
 - Conditions in a stream reach (e.g., bankfull width and depth, substrate composition, channel capacity) are a function of inherent characteristics of the reach itself (e.g., riparian vegetation type and condition, local lithology, geomorphology, channel gradient, valley width) and inherent characteristics of its watershed (e.g., drainage area, lithology, geomorphology, potential natural vegetation, climate, resultant hydrology), plus the land management overlay effects.
 - Recognize that salmon habitat quality is a function of maintenance of high quality of all streams and their associated watersheds within a subbasin. Implications of this concept: it is no longer acceptable to compartmentalize a watershed by claiming that only certain portions of the habitat of the stock as a whole is key and the rest is of lesser significance as far as protection. It is not acceptable to develop headwater areas that are intermittent or non-fish bearing perennial streams because these areas are hydrologically linked to salmon-bearing portions of the overall salmon habitat system.
 - Favor actions whose effects are easily reversible.
 - Favor actions that address the causes of problems, not the symptoms.
 - Favor purchase and reservation of key portions of the landscape that are extraordinarily influential in determining the condition of fish habitat. This would include riparian areas, floodplain areas, springs, groundwater recharge areas, key spawning, summer rearing, and overwintering areas.

- Favor removal of major anthropogenic sources of perturbation to fish habitat or deferring or curtailing activities known to cause degradation of fish habitat conditions or that impede restoration. Many activities cause degradation of habitat conditions that are difficult to detect via conventional monitoring (i.e., with normal monitoring techniques and sample sizes). However, these effects may cause widespread damage when conducted over a large area due to their cumulative nature. For example, thinning of riparian tree cover on even 100 meters of a stream reach is known from physical modeling to cause water temperature increases, but at this scale, the effect may be a difficult monitoring challenge to demonstrate. If the stream is currently exceeding water temperature standards, do not justify actions known to cause a worsening of habitat conditions just because it is difficult to demonstrate the effect.
- Entertain actions that are known to result in habitat degradation only after all habitat standards are met.

Habitat policies

- Give highest priority to habitat protection in areas of the Columbia Basin where high habitat productivity (as inferred from elements of habitat condition or fish productivity) are present. Such areas provide either the greatest opportunities for maintenance of existing population sizes or for recolonization or re-introduction of stocks and their near term population growth. Give highest priority to habitat protection and restoration in areas of the Columbia Basin where low or medium habitat productivity for identified weak populations (damaged and declining productivity, having predictable population extinction) is a limiting factor. Give priority to habitat projects that have been integrated into broader watershed improvement efforts and that promote cooperative agreements with private landowners.
- Give low priority to projects proposed for watersheds in which ongoing activities counteract and undermine their long-term effectiveness or that are merely mitigation for maintaining a level of activity that causes habitat damage.

Finding: The Council adopted a habitat-based approach and habitat objectives and strategies for the program that have been described in many places above. The Council concludes that what it has adopted is consistent with the substance of this recommendation, but stated in much more general terms at this stage. More to the point, there is nothing in the program that is inconsistent with this recommendation and nothing in the recommendation that the Council specifically rejected.

Source: Columbia River Inter-Tribal Fish Commission
Recommendation No.: 40

Recommendation: Finally, the Commission recommended an extensive set of quite specific habitat objectives and strategies, in the form of a complete mark-up of the habitat portions of Section 7 of the existing program, summarized as follows:

Habitat objectives and strategies

These objectives should be applied until it can be agreed by the relevant parties cited above that all feasible steps have been taken in an effort to achieve high quality salmon habitat and that all feasible steps have been applied for a sufficient time (known by experts in the field to be necessary) that further progress toward the goal is not physically possible.

Sediment

- Take action as needed to limit the percentage of fine sediments (less than 6.4 millimeters) in salmon and steelhead redds to no more than 20 percent. Limit cobble embeddedness to less than 30 percent or documented historic condition.
- As with other types of land disturbance that cause increased erosion, we recommend that grazing be temporarily suspended in watersheds that do not meet substrate standards until the standards are met, or a statistically significant ($p < 0.05$) improving trend over the course of 5 years is documented through monitoring and total sediment delivery is estimated to be less than 20% over natural.
- In subbasins currently limited by sediment problems, ensure as a first priority no increase in sediment input from human activities.

Bank Stability

- Maintain greater than 90% of streambanks in stable condition. In watersheds where bank stability is less than 90%, or there is a decreasing trend in bank stability, activities that can potentially decrease bank stability or forestall recovery should be eliminated until the standard has been reached or a statistically significant ($p < 0.05$) improving trend over at least five years has been documented through monitoring. Once an improving trend has been established but the standard is not met, activities should only be allowed if they do not impede continued improvement in bank stability. Suspension of riparian grazing is one of the key strategies to restoring bank stability.
- Grazing should be suspended within half a tree height from the edge of floodplains (or streams when floodplains are absent), in all reaches or watersheds where bank stability standards are not met, until the standard is met or a statistically significant improving trend ($p < 0.05$) over at least five years is documented through monitoring

Water Quality

- Water Temperature: Take all feasible steps to maintain temperatures in historically usable spawning and rearing habitat at less than 60 degrees Fahrenheit. Feasible steps will involve considerations of, for example, riparian condition (cover, vegetation composition, height) and watershed condition (road density, sediment delivery). Under all circumstances, do not exceed 68 degrees Fahrenheit throughout each watershed. Do not exceed 68 degrees Fahrenheit in the mainstem Columbia River and Snake River.
- Grazing should be suspended within the reserves in watersheds where the temperature standards are not met, until the standard is met, or a statistically significant improving trend ($p < 0.05$) over at least five years is documented through monitoring.
- Other water quality objectives: Fully comply with the existing federal, state, and tribal standards. Ensure that species' biological requirements will be met if there is not an applicable state or federal water quality standard. Reduce discharge of contaminants and pollutants to fully protect designated beneficial uses for anadromous and resident fish.
- Emphasize the application of the antidegradation principle of the Clean Water Act to all high quality waters as a basic anchor point in restoration of the water quality of stream systems on a holistic basis.
- Improve the conservation and reuse of water, using methods such as reduction of diversions, especially during low flow periods, reducing the incidence of combined sewer discharges, protection of groundwater sources by allowing recharge only from uncontaminated water sources
- Encourage land use practices that minimize surface soil erosion and reduce mass wasting.
- Enforce requirements to control pollution from point sources, such as factories and sewage plants, via discharges either directly to streams or to sewage systems.
- Encourage changes in laws governing discharge of polluted runoff in the non-point source form to control this major source of water pollution via methods such as conversion to sustainable

agriculture, reduction or elimination of pesticide and fertilizer use, mandatory erosion control and buffer strips, and use of retention basins to treat urban runoff.

- Identify and restrict all sources of persistent, bioaccumulative toxins known to affect anadromous and resident species or their habitats.
- Reduce non-point source pollution impacts through restoration and protection actions.
- Identify sources, levels, and effects of contaminants affecting endangered and threatened species and species that are consumed by human populations (salmon, lamprey, sturgeon).

Water Quantity

- Water quantity and timing: Determine instream flow needs for salmon and steelhead and establish flows, if not yet established, to meet these needs. Flow needs should be based on instream flow evaluation that considers channel morphology, sediment routing, floodplain function, water temperature and salmon and steelhead passage, rearing and spawning.
- Where the instream flow needs of salmon and steelhead identified above are not being met, the Council should recommend actions such as protecting and restoring wetlands and degraded meadow systems, restricting additional surface water or ground water withdrawals that do not consider the effects of stream flow on anadromous fish needs, and acquiring instream flows as needed for fish production.
- Establish biologically-based instream flow standards
- Conduct comprehensive basin assessments to review all permitted and non-permitted water uses, and enforce against illegal diversions.
- Meter all water diversions and withdrawals on anadromous fish streams.
- Establish a moratorium on new water rights in basins listed as flow-impaired under the Clean Water Act or otherwise not supporting biologically-based flows.
- Define wetlands and off-channel salmonid use as part of the regulated flow regime.
- Strengthen conservation requirements through application of "reasonable efficiency" standard, water marketing, tiered pricing, and other demand management techniques, and dedicate "saved" water to meet flow standards.
- Purchase or lease water rights with early priority dates to re-establish adequate instream flows in flow-impaired streams.
- Reduce or eliminate subsidies to reflect actual costs of water resource uses.
- Explore term-limited leases for water rights.
- Maximize irrigation efficiency and accountability, and decrease out-of-stream water withdrawals.
- Mandate appropriate water conservation measures to reduce out-of-stream demands for water.
- Eliminate federal and state government subsidies that encourage, promote and sustain otherwise uneconomic agricultural and other economic activities.
- Prevent damage to and destruction of riparian vegetation by fencing and other means, such as purchasing grazing permits and restore impacted riparian areas.
- Prevent further degradation and destruction of wetlands and restore impacted wetland areas.

Large Woody Debris

- Retain large woody debris in stream channels (including waters where salmon are not produced) to protect the sediment and nutrient storage and processing function of stream ecosystems supporting salmon and steelhead.
- The Council should recommend actions such as addition of large woody debris only after the causes of large woody debris loss and pool loss have been completely addressed. In addition, the Council should recommend that LWD additions aimed at forming pools should be undertaken only where it is ecologically appropriate given the types and existing conditions of the streams and riparian vegetation, and it has been documented that all other habitat conditions are amenable

to salmon survival and production (e.g., water temperature). LWD additions should never be considered a surrogate for the protection of riparian vegetation or the control of sediment delivery.

- Rather than specify numeric standards for in-channel LWD, we recommend full protection of LWD recruitment systems through the establishment of riparian reserves. Large woody debris loading rates appropriate to each stream reach will be expressed as a natural consequence of allowing passive restoration and riparian vegetative successional processes to act in the context of a riparian reserve system. Natural levels of LWD input will be maintained over the long term by full protection of buffers that are at least one site potential tree height in width (each side), where the site potential is that height attained in 300-400 years. Wider buffers may be needed to fully maintain other processes.

Large Pools

- Available data indicate that the production of salmon is reduced as pool frequency and volume decrease. The Council should recommend that watersheds should be managed so that there is a decrease in fine sediment volumes in pools and increased residual pool volumes in managed watersheds. We recommend monitoring these pool variables because they hold considerable promise as "early warning indicators" of trends in pool frequency and volume. The Council should not recommend a numeric standard for residual pool volumes because linkages between residual pool volumes and fish production have not been well established. Where there is an increasing trend in fine sediment volumes in pools, sediment delivery should be reduced through passive and/or active watershed restoration and the general sediment delivery standard should be reduced accordingly.
- Refer to the following minimum pool frequency objectives (pools per mile) or documented historic pool frequency if different from these objectives in comparison to current condition. Although pool frequencies listed are merely general reference points, they can serve as a measure of progress or distance from probable restoration endpoints.

Wetted Width: (in feet)	5	1	1	2	2	50	7	10	125	150	175	200
Pools per Mile	18	9	7	5	4	26	2	18	14	12	10	0
	4	6	0	6	7		3					

- The Council should recommend actions such as actively restoring riparian vegetation if there are declining trends in pool frequency and residual volume or bank stability. Active restoration may be necessary if appropriate or sufficient seed sources or root stock are not available to the site. The Council should favor the use of native plants appropriate to the site.

Riparian Vegetation

- Retain vegetation in riparian areas to stabilize banks, prevent warming of water, provide fish cover and food, and supply woody debris in the stream.
- The protection of riparian reserves is recommended in lieu of a stream shading standard. Activities that decrease or forestall the recovery of shading should not be allowed. In streams draining managed watersheds, an increasing trend in shading should occur. Stream shading be monitored for trends.
- We do not recommend riparian restoration approaches involving the removal of vegetation. Such approaches are fraught with risk, have low reversibility, and their effectiveness remains a matter of speculation. Such approaches should not be considered until they have been documented to have been successful under ecologically applicable experimental conditions, or until habitat and riparian conditions have improved in the majority of Snake Basin watersheds that provide salmon

habitat. Riparian restoration efforts should focus on activities that are low risk and likely to be effective, such as suspension of grazing in degraded reaches.

- As an index to ecologically appropriate riparian buffer widths for application to stream protection, use the site potential tree height, based on mature tree heights of 300-400 years on site types. A 100-year-old stand is a convention used by silviculturists to index site productivity, but it is the maximum tree height that has most ecological importance in relation to maintaining natural process rates, such as shading, LWD delivery, litter input, microclimatic control, etc.
- Do not link riparian protection to presence or absence of fish. Stream systems are integrated wholes. Proper functioning of fish-bearing reaches depends upon the health of upstream non-fish-bearing reaches as well as their own condition.

Stream Morphology

- Improve stream morphology (the structure and quality) to benefit salmon and steelhead.
- The Council should recommend against mechanical channel stabilization methods. These approaches can shift bank instability problems downstream and tend to fix channels to positions within floodplains, thwarting the ability of a stream to create complex habitat features, such as side channels and meander bend pools. Mechanical bank stabilization approaches are ecologically unsound and can create more and worse problems than they are aimed at solving.
- The Council should recommend against attempts to engineer fixed riffle-pool ratios, width/depth ratios, or straightening or confinement of channels.
- Allowing stream morphology to re-express itself may also depend upon natural floodplain and watershed function. Consequently, desirable channel dynamics may not emerge by simply establishing riparian reserves, but may also depend upon desirable dynamic conditions within the floodplain and watershed in general. Unconfined stream channels in floodplain systems can provide some of the greatest opportunities for salmon rearing. These systems have high habitat diversity due to their sinuosity, braided channels, off-channel habitats, and interaction with the floodplain.
- Increase the percentage of normative riparian zones and reconnect rivers with floodplains, side channels, and riparian zones.
- Floodplains are temporal extensions of the stream channel. Streams migrate across floodplains over time. During floods, floodplains act as channels. Therefore, floodplains should receive the same protection as streams. In addition, functional capabilities of the floodplain and the stream channels that may migrate to each floodplain edge are dependent upon energy and material (e.g., LWD, solar radiation, nutrients, sediment) inputs from upslope.
- For the preceding reasons, we recommend that riparian reserves along all streams extend at least 300 feet in slope distance from the outer edges of the floodplains (or stream edge in the absence of floodplains), or to the topographic divide, whichever is less. Reserves of this width on all streams, should maintain and restore stream shading, bank stability, LWD levels over time, and insulate streams from air temperature alterations, provided the riparian reserves are fully functional. Riparian reserves of 300 feet may not fully protect riparian vegetation from increased windthrow nor adequately buffer streams and floodplains from high levels of sediment delivery from upslope activities or extreme events. Recommended reserve widths may also not protect against water temperature increases and changes in baseflow hydrology because activities outside of the reserves, such as roadcuts, can disrupt subsurface hydrology.

Riparian Areas

- Managers should take special care to minimize vegetation removal or soil disturbance in the following areas:

Fish-Bearing Streams: The area on each side of the stream equal to a distance equal to the height of two site-potential trees, or 300 feet slope distance from the edge of the 100-year floodplain, whichever is greater.

Permanently Flowing Streams That Don't Produce Fish: The area on each side of the stream to a distance equal to the height of one site-potential tree, or 150 feet slope distance from the edge of the 100-year floodplain, whichever is greater.

Seasonally Flowing Or Intermittent Streams: The area on each side of the stream to a distance equal to the height of one site-potential tree or 100 feet slope distance from the edge of the 100-year floodplain, whichever is greater.

Constructed Ponds And Reservoirs And Wetlands Greater Than One Acre: The area from the edge of the wetland or the maximum pool elevation to a distance equal to the height of one site-potential tree, or 150 feet slope distance, whichever is greater.

Lakes And Natural Ponds: The body of water and the area to the outer edges of riparian vegetation, or to a distance equal to the height of two site-potential trees, or 300 feet slope distance, whichever is greater.

Wetlands Less Than One Acre And Unstable And Potentially Unstable Areas: The extent of unstable and potentially unstable areas, and wetlands less than one acre to the outer edges of the riparian vegetation.

- Protect all wetlands, regardless of size. Do not conduct activities that drain, fill, or otherwise impair the critical functions of wetlands.

Roads

- New roads should only be constructed consistent with the sediment objective (both the watershed sediment delivery standard and the inchannel sediment standards for fine sediment and embeddedness). Provide and maintain fish passage at all road crossings of existing and potential fish-bearing streams.
- New roads should not be constructed in areas of known high instability.
- Favor removal of roads within watersheds to reduce sediment delivery, alteration of water routing, and wildlife harassment. Especially favor removal or relocation of roads within riparian zones. These roads are more likely to contribute sediment directly to stream channels, constrain channel migration, require rip-rapping, and reduce riparian shading. Also, prioritize removal of roads on high hazard and unstable slopes, slopes with high potential to divert surface or subsurface flows or deliver sediment to stream channels.
- Design stream crossings to accommodate 100-year flood events. Favor use of natural channel bottoms through crossings rather than culverts.

Roadless Areas and Late-Successional Areas

- Given available data and known linkages among land use effects and habitat conditions, it can be reasonably concluded that the best water quality and habitat conditions needed by salmon exist in roadless/wilderness areas, where continuing disturbance of roadless areas has not occurred, or in watersheds having major contributions from upstream roadless/wilderness areas. The extent of these areas is limited. It may not be possible to enter roadless systems without compromising their natural function and/or without degrading habitat conditions. Roadless, unlogged tracts form the cornerstones of habitat recovery efforts. This approach forms the basis of most current aquatic and terrestrial habitat conservation strategies and also anti-degradation policy under the Clean Water Act. Despite existing data, many have speculated that roadless areas can be entered without degrading habitat conditions via careful planning, avoidance of high risk areas such as riparian areas to the extent considered feasible, and implementation of "Best Management Practices" (BMPs). Continued diminishment of areas functioning somewhat naturally increases the risk of failing to improve habitat conditions at scales ranging from the reach to the region.

- Reconnection of remaining roadless tracts and lands of high biotic integrity is one of the best measures for preservation of biological diversity. Small habitat patches have diminished capability for maintenance of populations dependent upon their characteristics. Halting and reversing habitat fragmentation in aquatic and terrestrial systems at a watershed scale is vital in restoring the productive capacity of these natural systems. Migratory fish species are particularly vulnerable to reduced productivity due to habitat disconnectivity.
- Given existing habitat degradation and uncertainties concerning the ability to develop remaining areas of high resource quality without impairing their ability to generate favorable salmon habitat conditions, it is prudent to require that most of the degraded habitat be improved prior to taking risks with the scarce areas having high quality habitat. We recommend that roadless tracts greater than 1000 acres should not be entered until monitoring documents that habitat conditions in >90% of managed watersheds either meet habitat standards or have exhibited statistically significant improvement over at least five years. Smaller roadless tracts may also have important ecological value. The Council should recommend that smaller roadless tracts should not be disturbed unless it can be shown through peer-reviewed analysis that the disturbance will not affect habitat conditions, impede habitat recovery, or foreclose options for habitat recovery.
- Establish late-successional reserves incorporating all remaining old growth, the best potential old-growth, roadless areas, and intervening lands to re-establish connectivity and extent of such habitat types. Reduction in fragmentation of late-successional vegetational communities should emphasize restoration of riparian corridors, floodplains, wetlands, and a diversity, integrity, and extent of upland forest types.
- Remove livestock from late-successional or roadless reserves with depleted grasses and forbs, eroded soils, and degraded watersheds.
- Cease fire suppression in late-successional or roadless reserves unless human life is in danger.
- Cease ongoing and planned timber harvest, including salvage logging in roadless areas.
- Obliterate roads in lands connecting roadless areas so that more continuous and extensive roadless areas can be created.

Grazing

- Implement grazing systems that are designed to either recover fish habitat within five years or maintain acceptable habitat conditions.
- We recommend that livestock be restricted from access to spawning reaches during and after the spawning season, because livestock can trample redds when they ford streams. If livestock access to these reaches cannot be prevented during the spawning and incubation periods, they should be removed from watersheds prior to the onset of the spawning season.
- We also recommend that grazing be eliminated from environments where it is clearly incompatible with the protection of aquatic resources. Grazing in wet meadows with fine-grained, non-cohesive soils and without woody bank vegetation almost always leads to stream damage.
- Forage utilization standards are an ineffective approach to restoration and protection in degraded reaches, wet meadows, seeps, and travel corridors because habitat damage stems from trampling and chiseling of banks and vegetation by livestock as well as the browsing and grazing of vegetation. A more effective approach to habitat improvement is to eliminate grazing in these areas
- Livestock grazing in watersheds where habitat standards are not met in salmon habitat should be suspended within the riparian reserves until those habitat standards are met or a statistically significant ($p < 0.05$) improving trend over at least 5 years is documented through monitoring. The extent of the riparian reserve in which grazing should be suspended depends upon the habitat standard that is not being met.

Irrigated Agriculture

- All activities should be conducted consistent with these objectives. In particular, return flows should meet state water quality criteria or these habitat objectives.

Timber Harvest

- All harvest should be conducted consistent with these habitat objectives.

Mining

- All mining should be conducted consistent with these habitat objectives.

Recreation Management

- The Council should recommend that recreational facilities within riparian zone areas be operated in a manner that contributes to the attainment of these habitat objectives.
- Prohibit off-road vehicle use in streams.

Fish and Wildlife Management

- Prohibit introduction or stocking of exotic fish.
- Assist State fish and wildlife agencies in elimination or reduction of exotic fish populations that create unfavorable production environments for native fish species.
- Restore and maintain the biological integrity of the waters of the Columbia Basin. This is a basic objective of the Clean Water Act, in addition to chemical and physical aspects of waters. Additional emphasis must be given to the biological goals of the act, including protection and monitoring of populations dependent upon clean water.

Land Management Generally

- The Council should recommend that prior to initiating management activities, land managers complete a watershed analysis to document existing habitat conditions, determine actions needed to meet habitat objectives provided herein and establish a schedule for implementation.

Application/implementation of habitat standards:

Application of habitat objectives to private lands

- Habitat objectives described as recommendations, if applied to all lands (public and private), would provide the greatest measure of success and least risk in recovery of salmon. However, for reasons of social and political interest in maintaining activities and resource uses that compete and conflict with salmon and water quality, because customary land and resource management approaches and perspectives are difficult and time-consuming to reverse, update, and retrain, and because improvement in current condition of salmon habitat, water quality, and watershed health involve readjustments in the segments of society dependent upon them vis-a-vis the segments linked to the status quo, the acceptance of the Council's habitat objectives may need to occur as a two-tiered process with near-term compliance on federal land and substantial, widespread, and increasing compliance on private land. In the long term, society as a whole will benefit from restoration of watershed health and water quality and that it is in the interest of ratepayers to support these efforts. Salmon restoration will be but one of the benefits stemming from this long-term commitment.
- In the short term, it may be necessary to accept less than optimum habitat objectives and land management goals in the interest of making positive net progress and geographically widespread progress. The past model of restoration under the program has been one of point-source restoration amid a background of non-point-source habitat quality degradation. This model must

be exchanged for one of widespread sharing of habitat goals and management guidelines. Strict adherence to the program's standards would provide a fairly low-risk recovery scenario. Recommendations made for federal land management are as important ecologically for application to private land, such as restricting road building in riparian zones, reduction in watershed scale soil erosion, restricting livestock access to stream channels and riparian areas.

- The Commission then provided a description of the Washington Environmental Council's buffer recommendations for private forestry as a model of private land management that is ecologically sound approach with a relatively low risk to salmon.

Preferences for expedited actions

In an edited version of the existing Section 7.6E of the program, the Commission recommended the following preference scheme and expedited funding procedure for certain types of habitat actions: To expedite funding for projects that involve transactions with private landowners and water rights holders, develop a list of actions with known efficacy that could be funded without excessive justification. For example, preference should be given to total removal of livestock from direct impact to streams, riparian zones, or entire salmon-bearing watersheds in cases having this option and where in-channel habitat conditions (linked to effects of livestock grazing) are not being achieved. Second preference would be to undertake actions that would result in total removal of livestock from direct impact to streams and riparian zones. These methods might include land purchase, grazing lease purchase, fencing, or other methods. Develop a set of criteria for evaluating the potential of the stream and watershed for producing salmon to be used to decide the significance of taking restoration actions. Third preference would be to reduce substantially both the grazing season and the number of livestock present until standards are achieved.

Land and water acquisitions

- Develop a land, water, and easement acquisition program. One of the most effective means of watershed restoration and habitat restoration is to purchase key parcels of land, purchase water rights to increase flows in streams, or acquire easements for the purpose of restoring lands. Acquiring and setting aside lands is often the only way to allow land to return to its natural condition. These acquisitions can improve habitat into perpetuity by allowing land to return to natural conditions similar to those that the tribes experienced prior to European settlement of the Columbia River basin.
- Develop a plan for the acquisition fund by: researching existing land acquisition programs; developing partnerships with existing programs; developing goals and objectives; researching feasibility, administration, legality, and logistics of program; and by obtaining regional review and critiques of the plan. The plan would then be implemented. Implementation would involve the creation of specific criteria to be used to select acquisitions, mapping of the Columbia Basin to aid in criteria development, operations and maintenance of acquisitions, and monitoring and evaluation of success of acquisitions in enhancing fish and wildlife restoration around the region. As a part of this program potential funding sources would be researched, partnerships with funding entities would be developed, funds would be secured from a variety of federal and non-federal sources, and accountability would be provided through reporting and tracking of funds used for acquisitions.
- Favor purchase and reservation of key portions of the landscape that are extraordinarily influential in determining the condition of fish habitat. This would include riparian areas, floodplain areas, springs, groundwater recharge areas, key spawning, summer rearing, and overwintering areas.

Watersheds

- Provide initial funding for a coordinator for each demonstration restoration watershed in Idaho, Montana, Oregon, and Washington. Appropriate coordinating entities include tribes, conservation districts, county governments, as well as other entities.

The Commission concluded by recommending a long list of specific habitat action measures, in Table 1.C.4.1.

Finding: The Council did not include in the program this set of more specific habitat objectives and strategies. It is *not* that the Council rejected these recommended habitat objectives or strategies or adopted obviously inconsistent provisions, and some are directly represented in the program (e.g., the recommendation for a land and water acquisition program). But for this reorganization phase of the program revision process, the Council decided on a consistent and fairly general level of detail for the basinwide objectives and strategies, and so it gleaned from this and other recommendations biological objectives and strategies at that level of detail. This is consistent as well with the more general recommendations from other fish and wildlife agencies (*see above*). Later phases of the amendment process will provide an opportunity to incorporate more detailed objectives and strategies at the finer geographical levels such as subbasins, as well as more specific objectives at the basin level. *See* Sections II.B, II.C, III.C, IV.B, V.A.5, VIII, Appendix D.

Source: National Marine Fisheries Service
Recommendation No. 54

Recommendation: The National Marine Fisheries Service recommended a set of habitat standards and strategies, summarized as follows with a finding after each part:

Standards

- Tributary habitat projects funded by the program should be actions whose primary purpose is to restore habitat quality. Such projects would not be undertaken but for the habitat restoration purpose. For example, habitat projects should not have a primary purpose of protecting banks where natural river processes are causing erosion. It is acceptable if bank stabilization is a side benefit of a restoration project.
- Tributary habitat projects should address the root causes of habitat problems, not just the symptoms. Tributary habitat projects should redress impaired watershed or aquatic functions, rather than re-engineer aquatic habitat structure. After the causes of habitat impairments have been reversed, it may be appropriate to accelerate recovery of habitat functions by directly mitigating the symptoms. For example, where habitat is impaired by loss of large woody debris (LWD) recruitment, adjust riparian management to eventually restore natural LWD recruitment before placing LWD in-stream. Otherwise the stopgap artificial measures may actually serve to retard the restoration of self-sustaining habitat processes.
- Watershed plans should ideally be nested in subbasin and province plans, to provide optimal spatial context, and to maximize effectiveness. The context provided by multi-scale analysis and planning is essential to prioritizing restoration resources on an ESU scale, and therefore realizing the greatest biological benefits.
- Where subbasin and watershed plans are not complete, the tributary habitat projects should meet the immediate action criteria described in the high priority action section of these recommendations. NMFS believes that while as a general matter, scarce resources should be committed only to projects that have been through science-based assessment and planning, some

actions should not wait. Actions that precede assessment and planning should meet the immediate action criteria to ensure that projects result in meaningful and rapid benefit.

- Habitat actions should reduce the likelihood of adverse impacts on listed species to the greatest extent practicable. Habitat actions should be reviewed for both short term and long term impacts. Both short term and long term impacts should be reduced or avoided. It is inevitable that in some cases, where instream construction is necessary, some short-term impacts are likely. Such projects should be pursued only if they have certain benefits and the short-term risk of take of listed species is acceptably low.
- The benefits of tributary habitat projects should be protected. For example, if water, riparian areas or land is acquired for purposes of aquatic conservation, every practicable effort should be made to protect that land or water for such purpose. For another example, if water rights are purchased, there should be assurances that the water is protected and not diverted by downstream or junior users. Project proponents should address this issue to the greatest extent practicable.

Finding: The Council adopted habitat objectives and strategies consistent with the substance of this recommendation, although more general. The Council did not adopt provisions inconsistent with or reject any part of this recommendation.

Innovative approaches to funding water quantity and quality needs -- non-profit brokerage

- Fund innovative approaches to restoring instream conditions, particularly water quantity and water quality. Tributary water problems are widespread, and solutions are, to this point, largely undemonstrated. The feasibility of solutions is an institutional question. The program should support innovative efforts to demonstrate how water management can be better adapted to meet the needs of people and listed species. NMFS (and the Federal Caucus) proposed a project aimed at demonstrating transactional strategies for securing improved tributary water quantity -- and where feasible, water quality -- in streams on non-federal lands. The project would take advantage of the fact that various entities, government and non-government, have developed the capacity to secure in-stream water, and are developing the ability to reduce pollution loading and temperature, using voluntary, transactional mechanisms consistent with state law. These organizations have growing experience but limited resources. A non-profit brokerage should be established through a competitive process to supply water to increase flows and water quality at least cost. The initial effort would be for five years. An objective third party evaluator such as the ISRP would evaluate the program after five years, and a decision would be made whether to continue. The non-profit brokerage would also develop a plan for a pollution bank through which water quality credits could be exchanged in markets, and evaluate whether such projects could in another ten years complete enough water quality and quantity acquisitions to fully protect the non-federal land portion of critical habitat for species of concern.

Finding: The Council adopted a provision calling for a water acquisition fund and program generally consistent with this recommendation, if more general. Section VI.A.8. The Council intends to work with, among others, the Fisheries Service and the other federal agencies to design and implement this program in a manner that serves their ESA needs as well as the Power Act mitigation obligation.

Clean Water Act/Endangered Species Act Integration

- Fund local watershed council and stakeholder participation in Clean Water Act and ESA compliance through pilot programs. NMFS, FWS and EPA are proposing to test whether CWA and ESA objectives can be accomplished in TMDL (total maximum daily loads) planning efforts. This would be tested in pilot programs that would have five objectives:
 - integrate ESA and CWA TMDL processes to avoid duplication of effort and sequential regulatory processes that frustrate grass roots watershed groups

- develop one set of watershed goals that meet both CWA and ESA
- provide watershed stakeholders with ESA and CWA assurances to the extent allowable by law
- preserve, protect and restore fish habitat consistent with the ESA and CWA
- develop and promote lessons learned by and from watershed groups

The pilot projects will aim for watershed plans with integrated, measurable ESA/CWA goals and targets. Habitat and pollutant reduction plans should be complementary, but clearly should produce an approvable TMDL with an implementation plan with a suite of specific actions to meet the goals with voluntary or regulatory actions. Uncertainty may be acknowledged through adaptive management. The greater the degree of uncertainty, the greater the importance of monitoring and monitoring design. Successful watershed projects are expected to educate and assist other watersheds. Pilot projects would be chosen on the basis of nominations from the states of Oregon, Washington, and Idaho. Tribes could submit nominations for pilot projects for watersheds in which the majority of the watershed is on a reservation. Watersheds or subbasins should meet the following criteria:

- 303(d)-listed waters and ESA salmonids
- the watershed has a viable stakeholder group, with effective leadership
- a desire of stakeholders and the state to meet both the ESA CWA in one process
- the current TMDL schedule is compatible with the pilot, or can be accelerated
- the watershed is representative of problems of water quality for salmonids (large urban watersheds would typically not qualify)
- the watershed has a significant ESA population, and a reasonable opportunity for restoration
- the watershed agrees to use appropriate assessment guidance

EPA, NMFS, FWS, Bonneville and the Council would select watersheds in consultation with the nominators. Successful watersheds and/or the states will be asked to develop a plan to accomplish the ESA/CWA integration. Federal agencies will be available to consult, coordinate and assist in identifying funding options for implementation plans. The program would fund landowner and watershed council participation.

Finding: The Council adopted this recommendation, if in more general terms, calling for integration of ESA and Clean Water Act planning and implementation requirements in the subbasin plans called for by the Council's program. See Sections V.A.3, A.5. The success of this planning process will depend in part on the active participation of the relevant federal agencies, especially the National Marine Fisheries Service, the Fish and Wildlife Service and the Environmental Protection Agency.

Mainstem Habitat

- Explore ways to restore mainstem habitat. There may be substantial benefits to gain from improving mainstem habitat. An experimental program that assesses the prospect of restoring habitat in the mainstem of the Columbia and Snake rivers is needed. Researchers in the U. S. and Canada suggest a number of opportunities to improve habitat diversity, complexity and productivity of large rivers like the Columbia and Snake. The federal agencies propose to fund and implement a program in three stages: (1) A comprehensive habitat assessment program for the mainstem Columbia and Snake rivers below salmon migration barriers and in the estuary. The assessment would review historic habitat conditions and survey the bathymetry and topography of current conditions. (2) Next, the agencies would use these assessments to develop and implement an initial habitat improvement program. (3) Finally, the agencies would implement a long-term mainstem habitat monitoring and evaluation program.

Finding: The Council adopted this recommendation in a more general form, calling for efforts to protect and expand mainstem spawning and rearing habitat. *See* Sections III.A.2 (fifth planning assumption), III.C.2.b and Appendix D (objective 1); III.D.2, III.D.3 (narrative text especially), III.D.6 (hydrosystem strategy on mainstem habitat). The phase of the program amendment process for adopting a mainstem plan will provide the opportunity for considering the more specific strategies and actions for implementing this objective.

Source: Bonneville Power Administration
Recommendation No. 37

Recommendation: Bonneville recommended that the Council adopt a program of habitat improvements that will focus on improving watershed health and ecological function. This approach emphasizes system improvements to all fish, wildlife and plant species, not just the anadromous fish, resident fish, wildlife and plant species of commercial or sports interest.

Successful habitat recovery on private lands will be effectively accomplished through a locally led planning and implementation watershed group. Wherever appropriate, watershed habitat improvement programs should be implemented using a locally led planning and implementation process similar to those that have been used by the Model and Focus Watershed Program and by County Soil and Water Conservation Districts.

Each habitat action will be assessed in terms of the credits Bonneville will receive for anadromous fish, resident fish, and wildlife mitigation.

Finding: The Council adopted provisions generally consistent with Bonneville's recommendations regarding habitat improvements and locally developed subbasin planning and implementation, *see* Sections II.B, III.D.1, V, without pointing explicitly to the Model Watershed approach or any other.

The Council did not adopt a crediting scheme that would apply to all mitigation actions, although it clarified the program's mitigation crediting policy with regard to wildlife, *see* Section III.D.7. The revised program does set the stage for the development of a crediting approach along the lines of Bonneville recommendation. It does so by virtue of its emphasis on a habitat-based program in which (1) biological performance objectives are to be based in the fish and wildlife losses caused by the construction and operation of the hydrosystem, which require mitigation under the Power Act, and then (2) by stating objectives for the environmental conditions and habitat changes required to allow the system to mitigate for those losses. As the Council develops the program in more detail based on this framework, that will be the time to consider the adoption of a crediting mechanism beyond the wildlife section that matches actions to fulfillment of the specific biological objectives.

Source: Environmental Protection Agency
Recommendation No. 32

Recommendation: The Environmental Protection Agency recommended that the Council specifically adopt water quality goals that are consistent with federal, state, and tribal water quality standards. These goals should apply to implementation throughout the tributaries and the mainstem.

Finding: The Council did not adopt such a specific provision. Instead the Council adopted, provisionally, basinwide biological objectives for protection and improvement in important aquatic and riparian habitat attributes and ecological functions, which include water quality; stating that habitat restoration may be framed in the context of measured trends in water quality; calling for water quality conditions that tend more toward the water quality that would exist under a natural hydrographic pattern; and so forth. Then the Council included subbasin planning provisions calling for assessments and for objectives and actions in the plans to address water quality considerations and to integrate planning and implementation of this program with water quality planning and implementation under the Clean Water Act. *See* Sections III.C.2.b and Appendix D; V.A.3 and A.5. The subbasin planners will need to assess what water quality standards exist in their area of reference and whether they are appropriate as objectives for the habitat conditions needed for the fish populations of interest in that area.

Source: Public Power Council
Recommendation No. 52

Recommendation: The Public Power Council recommended, with regard to naturally spawning fish and wildlife populations:

- Protect existing high quality habitat and improve degraded habitat.
- Geographic areas with the greatest numbers of native species should receive a greater emphasis.
- Geographic areas with the highest potential for increasing numbers of naturally spawning fish should be emphasized.

Aggressive efforts to force expensive habitat measures on rural communities will produce a backlash. The backlash will be worse if there is no clear plan and if there are not reasonable and clear priorities based on biological goals. The Public Power Council recommended that the program begin with public involvement processes at the watershed level that ensure local input into habitat improvement strategies. Public Power is very interested in supporting the Council and federal efforts to encourage constructive, effective habitat programs that benefit priority salmon and steelhead populations while taking into account local economies. Important element of this should be a serious look at lessons learned from model watersheds and other watershed experiences, including the rise and fall of the Yakima Watershed Council.

Finding: The Council adopted provisions consistent with the Public Power Council's recommendations regarding habitat improvements and locally developed subbasin planning and implementation, *see* Sections II.B, III.D.1, V. The Council also adopted habitat strategies calling for protection of existing productive habitat and improvements in degraded habitat, Sections III.D.2, D.3. Protecting, enhancing, and using native species is a priority of the program, *see* Sections III.A.2 (third planning assumption), III.D.3 (third habitat strategy), and increasing naturally spawning populations is also a central habitat and production strategy, *see* Sections III.D.2, D.3, D.4. The Council did not, however, assign higher priorities to one set of geographic areas over another. Instead, the Council identified a core habitat strategy of identifying, protecting and connecting the habitats that are most productive (for both weak and relatively stronger populations) and then expanding by improving adjacent habitats with a likelihood of contributing to the biological performance objectives of the program. Section III.D.3 (first strategy); *see also* Section III.C.2.b and Appendix D (first objective) and III.D.2. These provisions are intended to assist in identifying the priority objectives, sites and activities within any geographic area, rather than assigning one geographic area priority over another.

Source: Northwest Irrigation Utilities, Columbia-Snake River Irrigators Association, Eastern Oregon Irrigators Association
Recommendation No. 25

Recommendation: These irrigation interests recommended that the centerpiece for the new program be what they called the “New Water Management Alternative for the Columbia River Basin.” One of the two major components of the proposed New Water Management Alternative calls for the development of a broad set of water management projects within the tributaries and watersheds.

Water Resource Projects within the Tributaries and Watersheds: Prioritizing and Targeting Water Management Projects

Rather than mainstem flow augmentation, the focus for water management will be on upper river and tributary fish enhancement projects. Resource managers need to change water management operations away from mainstem flow augmentation actions to improving habitat-water management conditions within selected tributaries and watersheds. Greater fish benefits may be obtained within tributaries, using less volumes of water. This factor has been generally ignored within the present flow augmentation program. The end-effect of the existing flow targets/augmentation program is the misallocation of water; water is being used “speculatively,” at best, with no demonstration of beneficial use, either biological or economic. Water management should be optimized based on measures of biological-environmental benefit and cost-effectiveness.

Understanding and optimizing water use in tributary habitats will likely offer a more biologically productive, and cost-effective approach, to water management than past efforts. Potential projects should reflect a broad range of options for new water storage, water transfers and changes, and water efficiency measures. Examples of water projects would include:

- Developing new water storage projects within the upper tributaries; expanding the water storage capacity of existing projects; identifying areas where re-regulation reservoirs could be developed.
- Identifying change in water delivery diversion points that could provide both environmental and economic benefits.
- Improving water transfer legislation for the states (free of water right relinquishment requirements); expanding existing models of local management for water transfers and changes, such as water conservancy boards within Washington State; providing state funding to purchase water rights for targeted purposes.
- Providing funding for stakeholder identified water delivery efficiency projects, such as for irrigation district or municipal water systems; better evaluations of efficiency measures to understand direct changes to micro-hydrologic systems.

Water management actions should defer to the existing authority of state water rights and should allow for “locally developed” solutions within specific watersheds. This could include implementing efficiency measures, enhancing water transfers and changes, and encouraging the development of new water storage projects to benefit both fish and economic interests. New water projects should provide water allocations that allow for environmental, economic, and tribal benefits--everyone should have access to benefits. Water transfers (marketing) can be pivotal in reducing the demand for new water permits in the future and providing economic incentives for efficiency improvements. Pragmatic economic incentives will be more effective than regulatory “hammers” or theory any day. The criterion for whether water right holders or the state should receive “saved” water should be the funding source--private or public funds. The great property right versus public trust debate is fine for academic discourse, but property rights are what make the water system function. Water rights provide for economic incentive, flexibility, and productivity; and financial certainty. A water right must be functionally treated as a property right, or the water supply system will rapidly break down.

Finding: While the Council did not adopt the level of detail recommended here, the Council agreed with and adopted provisions consistent with what it understands to be the central point of the recommendation -- an important focus for the habitat-based program will be water management and stream enhancement projects in the tributaries, where significant fish benefits may be obtained with changes in use and management of much smaller volumes of water than in the mainstem. The Council identified improving aquatic habitat as a central objective of the program, including improvements in water quality and quantity as critical to fish habitat restoration. Sections III.A.1, A.2, III.C.2.b and Appendix D (first three objectives). The Council also adopted provisions for a water acquisition fund, recognizing the significant fish benefits that can accrue by being able to act quickly and flexibly to acquire interests in water as they become available in the tributaries. Section VI.A.8. All acquisitions must be on a willing buyer/willing seller basis, consistent with state water law, consistent with locally developed subbasin plans and, where appropriate, undertaken with consideration of impacts on local economies and governments. Section VI.A.8; *see also* Sections V (subbasin planning), VII.3 (preservation of water rights). The Council and others will consider the details recommended here for implementing water resources projects when developing the specific procedures and criteria for the operation of the water acquisition fund, when considering proposals for water acquisitions and other water management projects, and when developing and adopting subbasin plans that identify improvements in streamflows and water quality as an objective in that subbasin.

The Council did not adopt tributary water management provisions in place of water management and flow augmentation in the mainstem. The biological benefits of flow augmentation from mainstem storage need to be evaluated on their own merits, *see* Section III.D.6 (report on flow augmentation), and how to manage water through the mainstem hydrosystem to benefit fish and wildlife and serve the other purposes of the system will continue in any event to be a key issue for the region in the foreseeable future. Also, the Council did not adopt provisions specifically calling for new storage

Source: Columbia River Alliance
Recommendation No. 39

Recommendation: The Columbia River Alliance recommended a set of habitat strategies as follows, with a finding after each:

- Adopt proven and cost-effective measures with verifiable and quantifiable benefits to salmonids; conduct experiments on proposed measures to quantify benefits; and abandon measures whose benefits cannot be quantified. This includes strategies to select fish and wildlife measures for implementation based on cost-effectiveness analysis to maximize the public benefit from expenditures of finite salmon recovery funds.

Finding: The Council adopted this recommendation, although not in these precise words. This is a succinct description of the framework concept -- set objectives, as specific as possible; adopt measures with verifiable objectives; monitor and evaluate actions to determine their effectiveness; and employ cost-effectiveness analysis wherever possible in selecting measures and projects, a goal dependent on being able to set specific objectives and assess how an action might affect environmental or population conditions desired.

- Install irrigated spawning channels below dam tailraces and elsewhere to increase mainstem spawning habitat; survey reservoir habitat for extant spawning locations and focus on expanding areas with existing populations.

Finding: The Council adopted this recommendation in a more general form, calling for efforts to protect and expand mainstem spawning and rearing habitat. *See* Sections III.A.2 (fifth planning assumption), III.C.2.b and Appendix D (objective 1); III.D.2, III.D.3 (narrative text especially), III.D.6 (hydrosystem strategy on mainstem habitat). The phase of the program amendment process for adopting a mainstem plan will provide the opportunity for considering the more specific strategies and actions recommended here for implementing this objective.

- Liquidate and cap current habitat mitigation efforts funded by Bonneville and substitute the Bonneville Environmental Foundation or other vehicle for habitat grants. Create a one-time endowment of funding saved through mainstem operational changes. Focus habitat improvement funds on “wild reserve” rivers.

Finding: The Council did not adopt this recommendation. The Council’s obligation under the Power Act is to develop a program of objectives and measures to protect, mitigate and enhance fish and wildlife affected by the hydrosystem. On the basis of current conditions, actions and knowledge, it is not clear that it would be within the scope of the Power Act authority to substitute a present-value cash grant to represent the entire remaining mitigation obligation with regard to habitat. Habitat restoration under the program is in large part off-site mitigation authorized as “enhancement” away from the hydroprojects, to mitigate for some of the fish and wildlife losses directly attributable to the development and operation of the projects. To liquidate the habitat mitigation program at this time would require being able to make a definitive, quantified judgment as to the size of the mitigation obligation from hydrosystem impacts; the extent to which we will never be able to mitigate for those losses within the hydrosystem, and thus can assign a definitive portion to off-site mitigation; how much of the off-site mitigation obligation can be definitively assigned to habitat mitigation efforts and not production efforts or the combination of the two; and (especially difficult) specifically what types and levels of tributary habitat actions will in fact result in the satisfying off-site mitigation allocation *and then* how to price or value those efforts to determine the proper size of the liquidating grant.

At the very least, to try to size and value this mitigation obligation would be an enormously time consuming and expensive process, with little confidence in the results. The Council deemed it to be an imprudent investment of staff time, funding and other resources to undertake this activity at this time. There was no support for this recommendation from *any* other entity, not just the fish and wildlife agencies and tribes.

As noted elsewhere, however, there is a wide interest in the development of a usable approach to determining how to credit mitigation against losses in parts of the program other than wildlife, as well as an interest in the possible uses of endowment money or grants for all or part of the program, such as habitat acquisition, which would need to be tied to a mitigation crediting or evaluation protocol. The revised program has, in concept, the kind of scientific framework, approach to biological objectives, and analytical methods that should, if developed further in the proper way, allow the Council and others to assess the extent to which population and habitat conditions have changed due to hydropower development and operations and then the extent to which past and future mitigation efforts have addressed and might address those effects. If this analytical approach is carried out as proposed, not only will the Council and the program be able to roughly determine how much mitigation credit to assign to an action, it will also be able to revisit the extent of the mitigation obligation itself, which could provide the basis for reconsideration of this recommendation.

For these reasons, the Council finds that to accept this recommendation would be inconsistent with the Northwest Power Act, less effective than what the Council did adopt in assisting in the protection, mitigation and enhancement of anadromous fish, resident fish and wildlife, Northwest Power

Act §4(h)(7)(C), and would not complement the activities and recommendations of the region's fish and wildlife agencies and tribes, §4(h)(6)(A), (7)(B).

Source: Inland Ports and Navigation Group
Recommendation No. 49

Recommendation: The Inland Ports and Navigation Group recommended habitat improvements that offer good chances for fish recovery at reasonable costs. The group strongly recommended that federal and state agencies pursue culvert replacement in particular. Fish-killing culverts now block access to thousands of miles of spawning and rearing habitat, and their replacement with fish friendly culverts or bridges should be a high priority in the short term. Providing fish friendly replacement culverts or bridges should be at the heart of a short-term habitat improvement strategy. Private landowners should receive favorable federal and state tax treatment for replacing fish killer culverts.

Finding: The Council did not adopt a habitat strategy specifically aimed at culverts. The Council does agree that problems with culverts are critical in some areas. These problems need to be addressed in the subbasin plans, where appropriate, consistent with the Council's more general habitat objectives and strategies to protect and restore important habitat conditions for fish in the tributaries.

Source: Sierra Club -- Columbia Basin Field Office
Recommendation No. 27
Source: Save Our Wild Salmon
Recommendation No. 29

Recommendation: These two groups recommended a similar set of habitat strategies:

From the Sierra Club:

- Provide near-term protection or restoration of riparian zones on all fish bearing streams in public lands;
- Provide long-term protection or restoration of riparian zones on all fish bearing streams in private lands;
- Establish 300-foot natural buffers on all anadromous and resident fish-bearing streams;
- Attain water temperatures no higher than 68 degrees Fahrenheit on all coldwater anadromous and resident fish bearing streams;
- Protect from sedimentation all coldwater anadromous and resident fish-bearing streams;
- Achieve and maintain high water quality and quantity throughout the Columbia Basin;
- Protect and restore anadromous fish rearing habitat in the Columbia estuary, and cancel deepening of the sea navigation channel; and
- Provide strategic investments in land purchases, purchases of water rights, conservation easements, incentives, and infrastructure in order to implement habitat restoration at the fastest possible rate.

From Save Our Wild Salmon:

- Provide near-term protection and restoration of riparian zones on all fish-bearing streams in public lands, including 250-300 foot buffers;

- Provide long-term protection or restoration of riparian zones on all fish-bearing streams in private lands;
- Protect and restore salmonid habitat in the Columbia estuary by acquiring habitat within the estuary and restoring historic wetland areas;
- Cancel the Lower Columbia River Federal Navigation Channel Deepening Project;
- Maintain and achieve high water quality and quantity throughout the Columbia Basin. This includes meeting or exceeding all temperature and sediment water quality standards within the basin;
- Eliminate livestock grazing on all water quality limited streams through such measures as fencing requirements and buyout of current grazing permits;
- Provide strategic investments in land purchases, conservation easements, incentives, and infrastructure in order to implement habitat restoration at fastest possible rate. Areas of special importance include the Columbia River estuary and the John Day River; and
- Acquire water rights in key salmonid rearing, spawning, and migration areas.

Finding: The Council adopted more general habitat objectives and strategies consistent with the substance of these recommendations. This includes calling for protection and restoration of riparian habitats in important fish and wildlife areas; protection and restoration of fish and wildlife habitat in the estuary; objectives and strategies for addressing water quantity and quality issues as key components of a habitat-based program; a focus on protecting and expanding out from habitats in relatively more productive areas such as in the John Day River basin; and the creation of a land and water acquisition program. The Council did not adopt or expressly reject the more specific aspects of these recommendations -- such as to cancel the channel deepening project or eliminate all livestock grazing or set specifically-sized buffer zones for riparian areas. These are matters to be addressed in more specific objectives and measures in subbasin planning based on specific assessments of the conditions and opportunities problems in specific areas.

Source: **Boise Valley Fly Fishermen, Inc.**
Recommendation No. **14**

Recommendation: The Boise Valley Fly Fishermen, Inc., recommended that the program provide for the purchase of water rights which can be lawfully transferred to minimum stream flows which benefit fish during the non-irrigation season. The amount of water obtained should not exceed the minimum flow recommended from the state fish and wildlife agency. These water rights should be held by an entity, such as the state fish and wildlife agency, which will guarantee the rights will continue to be held for the benefits of the fish.

The Fishermen also recommended that program encourage tributary habitat improvements, such as conservation easements, fencing, habitat rehabilitation, etc., which allow for natural recruitment of fisheries. Protection and recovery of springs and riparian areas should be a high priority. The program should provide for purchase, protective easements, fencing materials and transplant vegetation to recover these important areas. Any improvements should be legally protected through an easement or similar instrument.

The program should provide limited funding for decreasing certain nutrient and sediment sources that adversely affect reservoirs. We recommend a 50% cost share for programs such as: (1) installation of new vault toilets around reservoirs; (2) sediment control from parking lots, boat ramps and other reservoir

access points; (3) restrictive easements and fencing to keep livestock from the reservoirs and important spawning areas; and (4) erosion control structures placed in highly erosive areas.

Finding: The Council adopted provisions consistent with this recommendation, if more general. The Council adopted objectives and strategies aimed directly at tributary habitat improvements such as recommended here, called for a land and water acquisition program consistent with the elements of this recommendation, and called for addressing water quality issues as an objective of the program in general and especially as an element of subbasin planning. Sections III.A.1, A.2, III.C.2.b and Appendix D, III.D.6, V.A.3 and A.5, and VI.A.8.

3(c)(ii) Artificial production strategies

Source:	Spokane Tribe
Recommendation No.	28
Source:	Montana Fish, Wildlife and Parks
Recommendation No.	31
Source:	Colville Confederated Tribes
Recommendation No.	33
Source:	Burns-Paiute Tribe
Recommendation No.	34
Source:	Shoshone-Bannock Tribes
Recommendation No.	38
Source:	Coeur d'Alene Tribe
Recommendation No.	42
Source:	Washington Department of Fish and Wildlife
Recommendation No.	43
Source:	Kalispel Tribe
Recommendation No.	48
Source:	Kootenai Tribe
Recommendation No.	50

Recommendation: These fish and wildlife agencies and tribes recommended that the policies and standards set forth in the Council's Artificial Production Review report be adopted into the program and applied when considering the continued or new use of artificial production as a strategy within a subbasin plan or when proposing funding for new or existing artificial production facilities under the program. The policies are:

- The manner of use and the value of artificial production must be considered in the context of the environment in which it will be used.
- Artificial production must be implemented within an experimental, adaptive management design that includes an aggressive program to evaluate benefits and address scientific uncertainties.
- Hatcheries must be operated in a manner that recognizes that they exist within ecological systems constrained by larger-scale basin, regional and global factors.
- A diversity of life history types and species needs to be maintained in order to sustain a system of populations in the face of environmental variation.
- Naturally selected populations should provide the model for successful artificially reared populations, in regard to population structure, mating protocol, behavior, growth, morphology, nutrient cycling, and other biological characteristics.
- The entities authorizing or managing a artificial production facility or program should explicitly identify whether the artificial propagation product is intended for the purpose of augmentation, mitigation, restoration, preservation, research, or some combination of those purposes for each population of fish addressed.
- Decisions on the use of artificial production need to be made in the context of, and consistent with, goals, objectives and strategies at the subbasin and province levels.
- Appropriate risk management needs to be maintained in using artificial propagation.
- Production for harvest is a legitimate management objective of artificial production, but to minimize adverse impacts on natural populations associated with harvest management of artificially produced populations, harvest rates and practices must be dictated by the requirements to sustain naturally spawning populations.

- Federal and other legal mandates and obligations for fish protection, mitigation, and enhancement must be fully addressed.

Finding: The Council adopted these recommendations with only minor editorial changes. Section III.D.4.

Source: Oregon Department of Fish and Wildlife
Recommendation No. 26

Recommendation: Oregon recommended the following standards for artificial production, to be used when developing and implementing strategies at all levels of the program:

- The purpose and use of artificial production should be considered in the context of the environment in which it will be used.
- The purpose and use of artificial production should be determined in the context of, and consistent with, goals, objectives and strategies at the province and subbasin levels.
- Artificial production should be implemented within an adaptive management design that evaluates benefits and addresses scientific uncertainties.
- Artificial production should use practices that maintain a diversity of genetic and life history types and species necessary to ensure populations survive and prosper under the full range of environmental conditions they face in their lifetime.
- Artificial production should model traits of successful naturally-selected populations, including population structure, mating protocol, behavior, growth, morphology, and other biological characteristics.
- Artificial production should use practices that reflect appropriate risk management.
- Legal mandates and obligations for fish protection, mitigation, and enhancement must be fully addressed.

Finding: The Council adopted artificial production policies consistent with this recommendation. As noted above, the Council adopted the artificial production policies from the Artificial Production Review report recommended by a number of fish and wildlife agencies and tribes above. The Council understands Oregon’s recommendation to be an edited version of the same policies, in which the substantive differences are minimal.

Source: Columbia River Inter-Tribal Fish Commission
Recommendation No.: 40

Recommendation: The Commission recommended a set of key artificial production policies or strategies. A finding follows each recommended strategy or group of related strategies:

- Empower the tribes to fully implement a basin-wide supplementation program, including the transfer of several hatchery operations to tribal control.
- Use artificial production, with an emphasis on protection and recovery of native fish, employing appropriate conservation management actions such as supplementation to provide eggs and juvenile fish for out-planting
- Use supplementation to:

1. Rebuild salmon populations, including those at high risk of extirpation, and minimize genetic risks such as inbreeding depression; and
 2. Reintroduce salmon to watersheds from which they have been extirpated (including the Upper Columbia River), to reestablish naturally spawning salmon runs genetically and behaviorally similar to those present before construction of the Upper Columbia River dams (Chief Joseph and Grand Coulee) and the Mid-Snake River dams (Hells Canyon Complex).
- Captive brood stock demonstration projects have not contributed in a meaningful way to the restoration of salmon runs in the Columbia River. Equal efforts put into supplementation techniques would be more beneficial.
 - Modify the National Marine Fisheries Service’s “Evolutionarily Significant Unit” (“ESU”) policy and state “wild fish” policies to increase their flexibility so as to allow effective implementation of supplementation programs consistent with sound conservation biology principles

Finding: Consistent with and in part based on this recommendation, the Council adopted a primary strategy for artificial production to use artificial production to complement habitat improvements and help rebuild declined populations by supplementing native fish populations to the sustainable carrying capacity of the habitat with fish as similar as possible, in genetics and behavior, as the wild native fish. Section III.D.4, *see also* Section III.D.2.

The Council did not include a provision for the transfer of hatcheries to tribal control. Whether to transfer control of a specific facility is an issue for the more specific planning and implementation phases of the program revision process. Neither did the Council include a provision definitively calling for the reintroduction of salmon into particular blocked areas. Responding to similar recommendation for the program’s vision from the Commission, the Council explained that it had adopted instead a biological objective and planning assumption that “[r]estoration of anadromous fish into areas blocked by dams should be actively pursued where feasible.” Sections III.A.2 (tenth assumption), III.C.2.a.2.

The Council did not include a specific provision opposing or assigning a lower priority to captive broodstock programs. The Council did adopt strategies favoring supplementation over other artificial production techniques, consistent with the recommendation.

Finally the Council did not adopt a provision calling on the National Marine Fisheries Service and the states to modify their ESU and wild fish policies. By adopting the primary strategy on supplementation, the Council agrees that, if implemented in an experimental, adaptive management fashion that includes an aggressive program to evaluate risks, supplementation can be implemented consistent with sound conservation biology principles. The *policies* of the Fisheries Service and the states may already be sufficiently flexible to allow for effective implementation of supplementation programs, as some are being implemented under the program. The problem, if one exists, may be more in the manner in which these policies are being implemented. The Council concluded that this issue is better addressed in the specific efforts to plan and implement supplementation programs in the subbasin planning process and in the on-going project review processes.

- Closely and continuously monitor tributary production and escapement to improve management.

Finding: The Council adopted this recommendation in substance, in provisions calling for monitoring and evaluation of production within an experimental approach and for monitoring of escapement. Sections III.D.4 and D.5.

- The Commission recommended the list of policies derived from the Artificial Production Review report, discussed in the recommendations above, with these additional recommendations:

- The performance standards and indicators from the Artificial Production Review should not be used as the basis for funding considerations for new and continuing hatchery programs within the Columbia basin. At present, they are, for the most part, inapplicable.
- If the assumption that the four lower Snake River dams will not be removed is to be used in the planning process, it must be recognized that populations that were “naturally selected” under pre-impoundment conditions may not possess the life-history attributes required for survival with the dams in place. This is certainly the case for stock structure -- there is no reason to believe that historical stock structure would be useful (or possible) in guiding recovery within the context of current conditions under which gene flow cannot mimic historical rates or directions. Similarly, for those stocks affected by dams, run-timing may change as a result of passage delay.

Finding: The Council adopted provisions that are not inconsistent with this recommendation. It did not adopt into the program the performance standards and indicators from the Artificial Production Review report or require that they be used as the basis for funding considerations. The policies the Council adopted state that naturally selected populations should provide a “model” for successful artificially reared populations, but specific decisions on whether and how to use artificial production must be made on the basis of the specific population and environmental conditions at issue. Section III.D.4. If the Commission is correct about the impact of the Snake River dams on life-history attributes and stock structure, which might then justify a deviation from using naturally selected populations as a model for artificial production in certain instances, the program does not prevent these considerations from being taken into account, where appropriate, in the specific planning and implementation decisions on artificial production in subbasin planning and project review.

- Continue research on Pacific lamprey, develop artificial production strategies and techniques, and implement them to supplement natural lamprey production
- Develop artificial propagation and management strategies and techniques for white sturgeon populations above Bonneville Dam
- The Commission recommended production strategies related to specific weak stocks, recommended as additions or revisions to the weak stock production strategies in the existing program:
 - Snake River Sockeye: Initiate experiments to investigate other approaches to reestablishing sockeye such as stock transfers.
 - other Snake River stocks: In addition to fall chinook, measures directed toward restoration of spring and summer chinook as well as steelhead should be included.
 - Columbia River coho: Implement restoration of coho salmon in the Snake and mid-Columbia rivers.
 - Pacific Lamprey:
 - ⇒ mitigate for the loss of Pacific lamprey in the Columbia River Basin. Recent research has established that hydroelectric dams cause high mortality on both juvenile and adult Pacific lamprey. The status of Pacific lamprey is very depressed. Recovery of Pacific lamprey could have additional biological benefits such as recruitment of marine nutrients to inland watersheds, robust lamprey populations could provide an alternative prey item for aquatic and avian predators thus buffering impacts on salmonids, and traditional Native American lamprey fisheries could be restored.
 - ⇒ restore and research Pacific lamprey populations in the Deschutes, and Hood rivers, and 15 mile Creek.
 - ⇒ restore and research Pacific lamprey populations in populations in the Snake River.
 - ⇒ restore and research Pacific lamprey populations in populations in the mid-Columbia River.

Finding: The Council did not adopt or reject artificial production strategies specific to any stocks. The Council did adopt biological objectives to restore the characteristics of healthy lamprey and white sturgeon populations. Section III.C.2.a.1, a.3. Otherwise, all of the strategies in the program, including the artificial production strategies, are potentially relevant to lamprey and white sturgeon restoration efforts and to other weak stocks in the program. Whether and what artificial production strategies for these fish are chosen, continued or discontinued is a subject appropriate for the more specific planning in the areas these fish inhabit.

Source: Columbia River Inter-Tribal Fish Commission
Recommendation No.: 40

Recommendation: The Commission then recommended introductory text and a risk/benefit strategy for the program's section on artificial production:

The tribal goal of putting fish back into the rivers and streams should be used as the overriding goal of the fish and wildlife program. To do that requires returning more of the basin's fish production to the rivers and streams where they came from. Rather than continuing current hatchery rearing and release methods, new and innovative propagation strategies designed to reestablish naturally spawning salmon runs must be implemented. The current status of many of the Columbia River anadromous fish runs requires prompt attention and implementation of artificial production strategies that can bolster natural production. Prudent analysis of the risks and benefits of such propagation strategies should be performed; however, time is running out for some salmon populations whose greatest threat to extirpation is demographic in nature. For those populations, aggressive supplementation actions may be the only solution that may maintain their lineage for future generations.

Hatchery operations that are designed and run with the goal of maintaining a hatchery run and utilizing mixed stock management, should be reprogrammed to restoration facilities. This reprogramming may involve the transfer of operations to tribes.

Research regarding supplementation must be pursued. Experiments must be scaled to a level that provides meaningful results. The proper scale of such experiments may have to be at the subbasin level. To date, there has been limited evaluation of supplementation from a scientific point of view, because of the restrictions imposed on the "experiments." Any and all present production efforts by the tribes have to be negotiated and approved by a large number of reviews, at scientific, administrative and political levels followed by endless processes. Consequently, there are no projects implemented that are clean tests of supplementation as the tribes are proposing. This is not the scientific method. The round pegs of tribal project proposals are forced through the square holes of scientific philosophy, and the result is implementation that is potentially fatally flawed. This is a very important problem for two reasons: 1) The region is waiting for answers to the question of supplementation as a conservation tool from research, monitoring, and evaluation of the existing projects, but the projects are severely constrained, and 2) The policies are used to limit the unconstrained tests of scientific alternatives, on the guise that these alternate strategies pose an undue risk to salmon populations. We seek to better integrate the goals and objectives of tribal restoration strategies and science, and work towards effective fish restoration in selected basins where the tribes would be empowered to better demonstrate their approach to restoration through enhancement of natural production, habitat conservation, and rehabilitation, and rigid implementation of research, monitoring and evaluation protocols.

A vision of conservation and restoration principles is required in order to coordinate and optimize use of public and private funding in fish and wildlife projects. As part of this coordinated effort, under the umbrella of ecological visions and frameworks, a method is needed to evaluate both the risks and benefits; as well as to allow comparison of expected biological effectiveness of these proposed actions. Further, fish and wildlife agencies have indicated that all programs must now perform benefit/risk assessments to determine if the demographic risks of extirpation of the target population exceed the genetic and ecological consequences of the state management action.

We propose to develop a risk/benefit assessment method that would be applied to the subbasin planning efforts now currently under way. Development of the risk/benefit assessment protocol includes: (1) review of existing literature regarding the identified management program, (2) review of historic and managed production of the targeted population(s), (3) review of literature regarding the species and the basin involved, including review of life cycle characteristics, (4) synthesis of information to structure a benefit/risk assessment, and (5) facilitate meetings between technical staff from the various agencies.

Benefit/risk analysis:

An assessment of the benefits and risks posed by a proposed artificial production action, alternative actions, and aggressiveness of implementation of a selected action will be a criterion for funding. The benefit/risk analysis will identify a goal, discuss management actions available to meet the goal, the potential for meeting the goal should the selected and alternative actions be pursued, and a list of potential genetic and ecological benefits and risks that may result from the actions. Since many of the benefits and risks of a proposed program cannot be quantitatively evaluated, potential benefits will be addressed using model-based approaches (i.e. projected adult returns for the selected and alternative management actions). Potential risks identified in the B/RA will be addressed by risk mitigation, that is, identified risks will be addressed by incorporation of management safeguards designed to minimize the probability of occurrence. The product of the B/RA will be: 1) a clear description of the value of a selected management action compared to alternate actions, 2) risk mitigation measures employed to minimize the probability of detrimental impacts, and 3) goals for the program, and a method to assess the probability of reaching those goals using the proposed and alternate management action. At a minimum, a B/RA will address:

1. an analysis of risks to the recipient (target and non-target spawning aggregates) as well as donor stocks (if they differ), from impacts associated with:
 - (a) captivity period in a hatchery facility, including:
 1. artificial selection
 2. rearing techniques
 3. proportion of broodstock comprised of hatchery-reared and naturally-spawned adults
 - (b) genetic interactions associated with interbreeding, including:
 1. loss of diversity
 2. outbreeding depression, inbreeding depression, and specific dysgenic and adaptation processes
 - (c) ecological interactions such as competition, predation, and potential for increased exploitation
 - (d) risk associated with no action/comparison of potential risks/benefits from alternate actions
2. a list of objectives, criteria for evaluation, and an estimated timeframe to achieve objectives
3. a list of potential benefits expected to result from implementation of the proposed action including:
 - (a) conservation/generation of genetic diversity
 - (b) conservation/generation of life-history types
 - (c) potential to halt or reverse declining abundance
 - (d) conservation of culturally and socially important resources
 - (e) restoration/conservation of spawning aggregates throughout the range of available habitat

- (f) restoration of ecosystem processes
- (g) restoration of tributary fisheries for sports and tribal fishing opportunities

Finding: The Council did not adopt the recommended text, or the risk/benefit analysis strategy. The text and strategies the Council did adopt are more general than but not inconsistent with the substance of the Commission's recommendation, especially in recognizing that the potential benefits of supplementation make it worthy to pursue, along with careful consideration and monitoring of the risks. When viewed in the light of other recommendations and comments, the Council does not agree with the Commission's conclusion that the implementation of supplementation experiments in general has been flawed by too great a limitation on and concern about project design. Subbasin planning and specific implementation decisions are the place for consideration of specific problems of these sorts.

Nor did the Council include the detailed risk/benefit analysis strategy. That does not mean the Council disagrees with or rejected the recommendation. The Council adopted a more general provision calling for an experimental approach to artificial production that will closely analyze and consider risks and benefits. This is just as appropriate for the decisions in subbasin planning for whether and how to use artificial production as it is in project design and review. Risk/benefit strategies such as recommended by the Commission may be considered by planners during subbasin planning.

Source: Columbia River Inter-Tribal Fish Commission
Recommendation No.: 40

Recommendation: Finally, the Commission recommended a completely edited, red-lined version of the production section (Section 7) of the existing program. Key substantive points raised in these edits were also found in the other Commission recommendations that have been addressed. The Commission also recommended a slate of specific production measures, Table 1.C.3.1.

Finding: The Council did not include in the program the specific detail or the recommended measures. The Council did not reject these measures. For this phase of the program revision process, the Council decided on a consistent and fairly general level of detail for the basinwide objectives and strategies, and so it gleaned from this and other recommendations biological objectives and strategies at that level of detail. As the Council stated in the request for recommendations, the Council did not intend to consider or adopt specific measures at this stage. Later phases of the amendment process will provide opportunity to incorporate more detailed objectives, strategies and measures into the program at the finer geographical levels such as subbasins. *See* Sections II.B, II.C, III.C, III.D, V.A.5, VIII.

Source: National Marine Fisheries Service
Recommendation No. 54

Recommendation: The National Marine Fisheries Service recommended incorporating the substance of the Artificial Production Review report into the program and harmonizing the program's provisions with the Fisheries Service's determinations under the Endangered Species Act

- Include in the program implementation of hatchery reforms as described in NMFS' biological opinions on hatcheries and hydrosystem operations. NMFS intends to include in its FCRPS Biological Opinion a reasonable and prudent alternative measure to implement reforms of federal mitigation hatcheries as required in a number of opinions on the hatcheries themselves. These actions should provide significant improvements in the survival and recovery of listed

anadromous fish. Implementation of these hatchery biological opinion reforms is also called for in the Council's Artificial Production Review report. These reforms would occur in the following hatchery mitigation programs: Lower Snake River Compensation Plan, Columbia River Fishery Development Program, Willamette Mitigation Program, Grand Coulee Mitigation Program, and the John Day Mitigation Program.

- Include early implementation of recommendations from the Artificial Production Review report reforming hatchery operations, improving hatchery planning, and increasing monitoring and evaluation activities. The Council's report provided several policy recommendations to Congress on the operations of hatcheries throughout the Columbia River basin. Several of those recommendations were intended for early implementation. These activities included: developing Hatchery and Genetic Management Plans, increasing monitoring and evaluation of propagation programs, implementation of ESA biological opinion reforms (see previous recommendation), conducting research on critical uncertainties surrounding hatchery supplementation, and conducting hatchery performance reviews. These activities are of significant importance to achieving the goals of the Northwest Power Act and the ESA.
- Include in the program development of Hatchery and Genetic Management Plans for hatcheries mitigating the effects of the FCRPS. NMFS' ESA responsibilities as applied to artificial propagation, the Council's APR recommendations, and the Council's provincial and subbasin planning processes all require the completion of Hatchery and Genetic Management Plans to initiate subsequent planning and reform actions. Funding needs to be provided promptly for HGMP development. Hatchery operating agencies and tribes need the financial assistance to prepare and revise HGMPs through both the ESA, subbasin planning, and performance review processes.
- Adopt a fast-track review and coordination process for emergency, safety-net intervention projects designed to avoid extinction of critical anadromous fish populations, pursuant to the ESA and the FCRPS Biological Opinion. NMFS intends to include implementation of safety-net propagation programs as a reasonable and prudent alternative in the upcoming FCRPS biological opinion. This action is viewed as critical to ensuring the survival and recovery of ESA-listed populations until habitat improvements can effectuate needed increases in population productivity. These emergency interventions will occur only as necessary and beneficial. NMFS intends to ensure that any such interventions on critical populations would only occur following completion of a Hatchery and Genetic Management Plan and a benefit/risk assessment. If it appears intervention is required, NMFS intends to coordinate these actions with the Council to ensure integration with the program. The Council should anticipate this needed review and coordination and support the process in its program.

Finding: The Council adopted artificial production strategies consistent with this recommendation, if more general in certain instances. Section III.D.4. The Council adopted the hatchery reform policies from the Artificial Production Review report. The Council did not specifically describe and include the hatchery reform policies from the biological opinions. The Council reviewed these reforms, and agreed with the Fisheries Service that the reforms called for in the APR report (and thus included in the program) are consistent with those in the biological opinions.

The Council included a provision calling for an initial evaluation of every program and facility for consistency with these reforms. As noted in the APR report, Technical Appendix B, the Council agrees that completing a Hatchery and Genetic Management Plan is part of implementing this strategy. The high priority and provincial project review processes provide sufficient opportunity for funding and implementation for the HGMPs. *See* Sections VI.A, X.

The Council did not adopt a fast-track review process for emergency “safety-net” intervention programs, concluding that the need for such interventions is more appropriately addressed in specific planning and project review processes.

Source: Bonneville Power Administration
Recommendation No. 37

Recommendation: Bonneville recommended the following strategies:

- Minimize supplementation projects with stocks or in areas in which there is a reasonable likelihood that the supplemented stock may affect unsupplemented stocks.
- Require analyses of all hatchery programs through a HGMP and a benefits-risk analysis.
- Minimize use of stocks in mitigation and production hatcheries that will compete for food in the same areas of the ocean or estuary as listed or weak stocks.
- Give priority to supplementation projects over captive broodstock projects.

Finding: The Council adopted artificial production and other strategies that are consistent with this recommendation, if more general in certain instances. Section III.D.4; *see also* Section III.A.2 (tenth and eleventh planning assumptions). With regard to HGMP analyses and benefits, and the preference in the program for supplementation projects over other artificial production interventions, including captive broodstock projects, *see* the findings to the CRITFC and NMFS recommendations above. All artificial production, including supplementation, should be implemented and closely evaluated to minimize adverse effects on naturally spawning, unsupplemented populations. The Council also calls for artificial production *not* to be used in areas where critical habitat is largely intact and the fish population has good biological potential for maintaining and increasing its productivity and abundance.

One way in which artificially produced fish can adversely impact naturally spawning fish, including listed stocks, would be through competition for food and other scarce resources. One of the general policies in the program emphasizes the need to consider artificial production in the context of the whole environment these populations inhabit, which includes consideration of effects in the ocean. Other strategies call generally for increased efforts to identify what happens in the oceans. Section III.D.8. Thus to the extent it is possible to identify situations in which artificially produced fish are competing for food in the ocean and estuary with listed and weak natural stocks to the detriment of the latter, this would not be consistent with the program.

Source: PNUCC
Recommendation No. 55

Recommendation: PNUCC recommended the following strategies; a finding follows each:

- A comprehensive watershed audit should be conducted to establish biological priorities for rehabilitating naturally spawning salmon and steelhead populations, while identifying needs and possible impacts to other fish and wildlife populations. Some watersheds, or portions of watersheds, will be designated prime habitat for naturally reproducing salmon and steelhead populations; other watersheds will be designated production streams to support fish harvest objectives, with still other streams designated as not suitable for salmon and steelhead production.

Finding: The Council adopted provisions consistent with this recommendation. The audit recommendation is consistent with the subbasin assessment provisions, Section V.A.3, with the call for evaluations of production in the larger context of subbasin assessments and planning, Section III.D.4, and more generally with the main purpose of the redesigned program framework. The recommendation for designating areas for certain types of mitigation activities relating to production is consistent with the provisions describing the linkage between biological objectives and strategies, which call for identifying the habitat conditions and biological potential in an area and considering what mitigation strategies are possible on that basis, Section III.D.2, and the artificial production strategies, which call for, among other things, the identification and protection of wild salmon refuges, Section III.D.4.

- There is an obligation to provide fish and wildlife mitigation where habitat has been permanently lost due to federal hydropower development. In those cases, artificial production will continue to be used to replace capacity and bolster productivity, but this strategy can be used only to the extent that mixed stock harvest pressure on weak, naturally spawning anadromous and resident fish populations can be alleviated. Artificial production must include an experimental, adaptive management design to evaluate benefits, address scientific uncertainties, and improve hatchery survival while minimizing the impact on, and if possible benefiting, fish that spawn naturally. This is an important policy statement about the role and risk of artificial production. The linkage between hatchery production and mixed stock harvest must be broken before hatcheries can be used to support harvest objectives.

Finding: The Council adopted artificial production strategies and planning assumptions consistent with this recommendation except for the references to harvest. *See* Sections III.A.2 (tenth, eleventh and twelfth planning assumptions); III.D.4. While the Council agreed with PNUCC about the need for careful consideration of and reform in the relationship between production and harvest, the Council took a different approach to resolving those problems, as explained in more detail in the findings on PNUCC's recommendations on the vision, above, and on harvest, below. The Council recognized that production for harvest is a legitimate management objective, but "harvest rates and practices must be dictated by the requirements to sustain naturally spawning populations," Section III.D.4, and "[h]arvest rates should be based on population-specific adult escapement objectives designed to protect and recover naturally-spawning populations," Section III.A.2 (twelfth assumption). The Council is not recommending or suggesting to the harvest managers anything about the validity of mixed-stock harvests, only that however the managers organize and manage harvest (and production for harvest), the objectives must support the rebuilding of naturally spawning populations.

- Develop a program that will both protect and enhance the region's strong meta-populations while restoring weak populations listed under the ESA. This is a new approach designed to broaden the management focus to more than just weak populations and sub-populations as has happened under the ESA. A simultaneous focus on both strong and weak stocks of fish will encourage natural straying that, when combined with managed supplementation, will rebuild weakened naturally spawning populations.

Finding: The Council adopted biological objectives and habitat and artificial production strategies that are consistent with the substance of this recommendation and based on the concepts that underlie it, if stated more generally.

Source: Columbia River Alliance
Recommendation No. 39

Recommendation: The Columbia River Alliance recommended:

- Unify and standardize hatchery reporting obligations to a single funding entity and require reporting concerning success in producing returning adults to applicable watersheds.
- Mark all hatchery fish to facilitate selective harvest. Highest net economic benefits will come from non-tribal recreational harvest, which can select for hatchery stocks.
- Use a central entity to serve as clearinghouse for successful approaches to artificial production, such as spawning channels and egg boxes.
- Fund applied genetics research to inquiry into restoring lost size of salmonids, improving disease resistance, and improving tolerance for warmer habitat, as well as other genetic improvements that will increase salmonid abundance.
- Allow hatchery operators to share revenue from salmon and steelhead tags in hatchery watersheds, to establish feedback loop for hatchery success.
- Move hatcheries to tribal management, because tribes may have longer-term management focus, and will reap 50% of harvestable fish pursuant to Supreme Court treaty interpretations, again establishing feedback loop for hatchery success.
- Declare specific tributaries “off-limits” to hatcheries (*e.g.*, John Day River) to provide buffers against asserted genetics problems with hatchery production.
- Designate tributaries with extensive hatchery influence as “production/supplementation” tributaries and abandon efforts to protect existing wild stocks in such tributaries.
- Evaluate the comparative cost effectiveness of improved habitat/wild reserve tributary production vs. artificial production/supplementation tributary production.

Finding: The Council adopted provisions consistent with parts of this recommendation. For example, the Council adopted a strategy calling for artificial production not to be used in areas with relatively intact habitat and populations with relatively good biological potential, Sections III.D.2, D.4. Considering specific areas, such as the John Day River, for such a designation, is for later stages of the program revision process. In other areas, the Council accepted as a possible strategy the use of supplementation in connection with habitat improvements to help rebuild natural runs. This seems consistent with the underlying substance of some of the Alliance’s recommended strategies (although it is unclear if supplementation to rebuild natural runs means the same, to the Alliance, as abandoning efforts in supplemented streams to protect existing wild stocks). And while the Council did not specifically include the comparative analysis recommended, if planning and implementation at the subbasin level works as planned, then the biological objectives and the monitoring and evaluation programs established for these different areas may allow for some attempts at comparative cost-effectiveness of these strategies, as recommended.

The Alliance’s recommendations concerning reporting of results, standardized reporting obligations, and a clearinghouse for information on successful approaches are consistent with the Council’s more general provisions calling for regularized cycles of evaluation and reporting of results, and use of the reported information across the region to address uncertainties and make adjustments. Section III.D.4.

The Council did not adopt or reject the recommendation to shift hatcheries to tribal management. Subbasin planning will be the appropriate forum for considering those specific proposals for transfers that have relevance to activities under the program. The Council did not adopt the recommendation to allow hatchery operators to share harvest license revenues (which in effect happens in some agencies, as license revenues help fund other agency activities), as outside the scope of the Council’s program under the Act.

Finally, the Council did not adopt the recommendation to call for the marking of all hatchery fish, an issue that divides the fish agencies and tribes as well as others. Instead, the Council focused on the underlying substantive objective -- harvest and production for harvest are legitimate management activities, but they must be implemented in a way that sustains and supports the rebuilding of naturally spawning populations. Subbasin plans and hatchery management plans must analyze and harmonize production and harvest and must clearly explain how the actions to be taken will not undermine this key objective. Moreover, artificially produced fish created for harvest should not be produced if they cannot be harvested or provide some other significant benefit. Finally, subbasin and hatchery management plans should look for opportunities to increase harvest and may propose for funding techniques to that end, such as marking, selective harvest techniques, and so forth. Sections III.D.4, D.5. It is up to the harvest and production managers and others to develop specific strategies and actions consistent with these general but significant objectives and policies. Marking all hatchery fish might emerge as a necessary or acceptable strategy, but the Council is presuming that marking is but one of the possible alternatives for consideration. More important, the choice of specific strategies and actions is irrelevant to the Council so long as the critical policies are followed and the main objective is achieved. On this basis, the Council finds that the recommendation would be less effective than what the Council adopted in the protection, mitigation and enhancement of anadromous fish, resident fish and wildlife, Northwest Power Act §4(h)(7)(C), and that it does not complement the activities and the recommendations of the fish and wildlife agencies and tribes as well as what the Council adopted, §4(h)(6)(A), (7), (7)(B).

Source: **Public Utility District No. 1 of Chelan County**
Recommendation No. **4**

Recommendation: When human activities lead to unavoidable mortality, mitigation can be provided not only through artificial production (i.e., hatcheries), but also through habitat enhancement in the streams and in the estuaries. Artificial production is thus not the only way to replace productive capacity due to permanent habitat loss.

Finding: The Council adopted this recommendation. The Council adopted a habitat-based mitigation program, in which artificial production is to be used “consistent with the central effort to protect and restore habitat and avoid adverse impacts to native fish and wildlife species.” Section III.A.2 (third assumption). When the program states that artificial production of fish may be used to replace capacity and bolster productivity, *see* Sections III.A.2 (tenth assumption), III.D.2, the Council does not mean artificial production is the only way to achieve these goals. Instead, this is meant as a statement of the underlying purpose of artificial production when it is chosen.

Source: **Sierra Club -- Columbia Basin Field Office**
Recommendation No. **27**

Source: **Save Our Wild Salmon**
Recommendation No. **29**

Recommendation: The Sierra Club and Save Our Wild Salmon both recommended:

- Operate hatcheries for species conservation and diversity, mitigation, and research.
- Reduce artificial fish production as fish populations and harvests recover.

Save Our Wild Salmon added:

- Operate hatcheries with stocking programs derived from and consistent with wild fish protection and ecosystem carrying capacities.
- Reform existing hatchery operations to minimize adverse impacts on native stocks.
- Devise fish culture that is less domesticating.
- Reject artificial production in lieu of habitat protection and restoration.
- Ensure that future artificial production activities work in conjunction with subbasin habitat plans.
- Redirect funds saved from downsizing hatchery programs to other essential improvement programs, especially habitat preservation and restoration.

Finding: The Council adopted artificial production policies and strategies generally consistent with these recommendations. Sections III.A.2, III.D.2 and D.4. The Council adopted a habitat-based mitigation program, in which artificial production is to be used “consistent with the central effort to protect and restore habitat and avoid adverse impacts to native fish and wildlife species.” Section III.A.2 (third assumption). The program included provisions for confining the role of artificial production in a program focused on habitat protection and restoration, linking production to complement habitat improvements rather than substituting for them; maintaining life history and genetic diversity; minimizing adverse effects on native stocks; using artificial production as an “interim” strategy in certain areas to hasten rebuilding of naturally spawning populations after habitat restoration efforts, which implied a reduction in the use of artificial production as populations recover; using naturally selected populations as the model for successful artificial production, which would reduce domesticity; and providing that decisions on the use of artificial production must be made in the context of deciding on goals, objectives and strategies in a subbasin plan. The Council did not include provisions calling for a redirection of funds from hatchery programs to habitat preservation. Recommending funding strategies consistent with the objectives, priorities and strategies in the program will be a subject for the more specific subbasin planning processes to come as well as for the project review and funding recommendation processes.

Source: Bill Bosch
Recommendation No. 3

Recommendation: Mr. Bosch recommended that the program utilize hatcheries for short- to mid-term fishery mitigation and gene banking, to maintain existing demographic and genetic fishery resources, given that habitat restoration strategies are necessarily long-term. The region should accept that, although the best “wild genes” may exist only in truly wild fish, “wild genes” and “wild know-how” exist in hatchery fish. Maintain our existing hatchery programs and perhaps create new ones. Salmon are known for their ability to move and colonize new or restored habitat. When we get a “normative” river system restored many years from now, begin to dismantle the hatchery system and let the fish re-colonize the restored natural system on their own over time. In the meantime, the region can still have fisheries, and where certain stocks are deemed not likely to survive the transition period to a “normative” river, the genetic characteristics represented by these stocks can be preserved in a hatchery environment. Redirect the tens or hundreds of millions of dollars spent annually on PIT tags, coded-wire tags, blank wire tags, spaghetti tags, radio tags, eye tags, adipose-fin clips, ventral fin clips, anal fin clips, etc., and all of the associated research dependent on these tags and marks, toward the research described above that will give us long-term solutions.

Finding: The Council adopted artificial production strategies and policies that are consistent with this recommendation, if more general. See Sections III.D.2, D.4, D.5. The Council did not include a provision specifically redirecting program investments in monitoring in the manner recommended. What

specific monitoring and research activities are consistent with the strategies in the program should be considered in later, more specific phases of the program amendment process and in the processes that call for, review and recommend proposals for funding to implement the program.

Source: Jim Likes
Recommendation No. 2

Recommendation: Mr. Likes recommended that artificial production should be used to rebuild seriously depleted fish populations in the Columbia while also continuing to produce fish for harvest. Fish hatcheries must go beyond their traditional role of producing fish for people to catch, adopting an additional role of assisting in the restoration of fish that spawn naturally from prehistorically and historically indigenous populations. Fish hatcheries should focus on experiments and research regarding their effects on wild fish.

Finding: The Council adopted artificial production strategies and policies consistent with this recommendation. Section III.D.4; *see also* Section III.D.2 (linkage of biological objectives to strategies, describing possible application of artificial production strategies).

3(c)(iii) Strategies concerning the relationship of the program to harvest management

Source: Oregon Department of Fish and Wildlife
Recommendation No. 26

Recommendation: Oregon recommended that in developing and implementing strategies, the Council should apply the following standards on harvest management:

- Harvest management should be consistent with protection and recovery of naturally spawning populations and the ecosystem functions supported by those naturally spawning populations.
- Harvest management should ensure the risk of imprecision and error in predicted run size does not threaten the survival and recovery of naturally spawning populations.

Finding: The Council adopted this recommendation. *See* Sections III.A.2 (twelfth planning assumption -- harvest rates should be based on population-specific adult escapement objectives designed to protect and recover naturally spawning populations), III.D.4 (strategy related to production for harvest -- same), III.D.5 (harvest strategies, including provision on risk of imprecision and error as part of monitoring strategy).

Source: Burns-Paiute Tribe
Recommendation No.: 34
Source: Shoshone-Bannock Tribes
Recommendation No.: 38
Source: U.S. Fish and Wildlife
Recommendation No. 46

Recommendation: From these two tribes and the Fish and Wildlife Service come these recommended harvest strategies and standards:

- Harvest management must take into account the relation of salmon abundance to the conditions in all components of the ecosystem that are connected by the life-cycle of the target fish.
- Harvest rates and levels should be determined on the basis of adult escapement objectives designed to protect and recover natural spawning populations and the ecosystem functions supported by those naturally spawning populations, such as nutrient and energy flows.
- Revise harvest management to more adequately spread the risk of imprecision and error in predicted run size. Enact more conservative harvest limits on fisheries farthest from the spawning grounds, for which information is less adequate.
- While the Council has no authority to set harvest levels, as part of the review of a subbasin plan, those presenting it will need to demonstrate that the population levels proposed in the plan are consistent with current or anticipated future harvest regimes in those areas through which the fish must pass in reaching the subbasin.

Finding: The Council adopted provisions consistent with the substance of these recommendations. *See* Sections III.A.2 (twelfth planning assumption -- harvest rates should be based on population-specific adult escapement objectives designed to protect and recover naturally spawning populations), III.D.4 (strategy related to production for harvest -- same), III.D.5 (harvest strategies -- same, plus subbasin plan linkage as well provision on risk of imprecision and error as part of monitoring strategy).

Source: Columbia River Inter-Tribal Fish Commission
Recommendation No.: 40

Recommendation: The Commission recommended a number of standards and strategies for harvest management, beginning with this statement of the major elements of their harvest recommendation:

- Fully implement the conservation and allocation provisions of the 1999 Pacific Salmon Treaty agreement, which calls for a coast-wide abundance-based management approach for the Columbia River, and the Habitat and Restoration Agreement.

Harvest management strategies

- Establish harvest regimes based on escapement goals that enable the recovery and restoration of all salmon and other fish and wildlife species.
- Establish harvest regimes consistent with the Conservation Principles of U.S. v. Oregon, other applicable case law, Treaties and Executive Orders, that account for and properly apportion all direct and indirect sources of salmon mortality, including that inflicted by the hydrosystem, tributary land and water use and management practices, and other such sources.
- Monitor effectiveness of newly adopted abundance-based management for North Pacific ocean fisheries in reducing direct and indirect (incidental) fishing mortality on Columbia Basin salmon.
- Ensure that incidental salmon mortality (bycatch on non-targeted species) in other North Pacific and Bering Sea fisheries is accounted for and minimized through strict monitoring and adaptive management.
- Re-establish traditional tribal fisheries at all usual and accustomed fishing stations and sites.
- Abundance-based harvest management frameworks have been adopted on a coastwide basis. These management frameworks now also take into account total adult equivalent fishing mortality; all other management areas (the other three Hs) affecting salmon production and productivity must now do likewise.
- Harvest management frameworks are based upon interim escapement goals for naturally spawning stocks, these goals are currently being reviewed by tribal and agency technical staff where necessary pursuant to the recent agreement under the Pacific Salmon Treaty. Yet it is management (in)action in the other three Hs that will continue to limit the ability of fishery managers to achieve salmon restoration based escapement goals.
- Harvest management frameworks currently have procedures that achieve the objective of enacting more conservative harvest limits on fisheries farthest from the spawning grounds, for which information is less adequate. Management frameworks for restoration actions in the other three Hs need to be updated to achieve this objective.
- Current harvest management frameworks are currently geared to meet the objective of demonstrating that the population levels proposed in subbasin plans are consistent with current or anticipated future harvest regimes in those areas through which the fish must pass in reaching the subbasin, unlike the management frameworks for the actions taken in the other three Hs.

The Commission then recommended a general discussion or introductory narrative on harvest management. Only the last few paragraphs are included here, to summarize the thrust of the narrative and introduce the points central to the recommendation for strategies for the program, including the relationship to production and habitat strategies:

Intensive negotiations, especially in early 1999, allowed the U.S. and Canada to successfully complete a package of long term agreements for fisheries management under the Pacific Salmon Treaty by June, 1999. Key among these agreements is an aggregate abundance-based management approach for chinook ocean fisheries in Canada and Alaska. This is complemented by an individual stock based management approach for ocean and in-river fisheries south of the U.S. (Washington State)-Canada border. This new harvest management agreement was evaluated and negotiated consistent with NMFS' ESA standards for ocean and in-river fisheries (e.g., impacts on Snake River fall chinook) and to ensure allocation requirements would again begin to meet obligations outlined under the stipulation in Yakama v. Baldrige and Congressional testimony in 1985.

In addition, an Agreement on Habitat and Restoration was reached by the U.S. and Canada under the Pacific Salmon Treaty as part of a comprehensive approach to rebuilding salmon stocks coastwide. This agreement is designed to identify non-fishing related limiting factors for depressed stocks and provide recommendations on how stock production and productivity may be improved through habitat restoration, enhancement, or other activities. These steps must be taken before any additional reductions are taken in any fisheries, outside of those reductions that are consistent with the AABM and ISBM regimes established under the Salmon Treaty agreement.

The political demand for continuing the major allocation of salmon mortality to the hydropower system, and other land and water management actions that limit salmon production and productivity, continues to place harvest management systems under a great deal of pressure to minimize the number of fish they make available for harvest. Inadequate information and budgets, and the variable nature of salmon, the environment and the fishing fleets, coupled with the region's inability to address the real problems limiting production and productivity of salmon in the other three Hs, continue to make it extremely difficult to precisely manage harvest impacts on weak stocks.

In the Columbia River Basin, the problem associated with mixed-stock fisheries results largely from the operation of hatcheries separate from the naturally spawning populations of salmon. The desire to continue these failed production programs has led to the misguided development of a mass-marking industry in the Pacific Northwest, with the goal of further restricting fishing to selective fisheries, as opposed to changing management practices in other arenas. The mixed-stock fishery problem cannot be resolved without implementing a hatchery reform program that focuses on restoring and increasing through the supplementation of weak or depressed stocks. This solution also requires the development and implementation of complementary programs to increase the productivity and survival of wild and naturally spawning stocks throughout their life cycle, such as increased survivals through the hydropower system, rather than continuing the development of another techno-crutch in the form of selective fisheries.

Ocean Harvest Strategies

The 1999 agreement reached under the U.S.-Canada Pacific Salmon Treaty was negotiated consistent with the NMFS' ESA standards for ocean and in-river fisheries (e.g., impacts on Snake River fall chinook) and to ensure allocation requirements would again begin to meet obligations outlined under the stipulation in Yakama v. Baldrige and Congressional testimony in 1985. The harvest agreement specific to Columbia River chinook stocks under the Salmon Treaty:

- is for ten years, running through 2008, and restates the chinook rebuilding goals and objectives agreed to by the U.S. and Canada in 1985;
- implements harvest reductions for the Southeast Alaska (SEAK) all gear chinook fishery from the old ceiling of 263,000 at abundance index levels below 1.35 (there is some belief that the

abundance index for this fishery will be below 1.2 through the length of this agreement, resulting in an average total annual catch level reduced to 207,000 or less in SEAK);

- institutionalizes recent voluntary Canadian reductions, with substantial reductions from the 1985 - 1996 average harvest levels in the Northern British Columbia (NBC) Troll, the Queen Charlotte Island (QCI) sport fishery, and the west coast Vancouver Island (WCVI) troll and outside sport fisheries (where a 40% reduction from recent average harvest levels will remain in place, this is the equivalent of about a 60% reduction from the 1979 -1982 base period), these are major reductions from the old harvest ceilings and provide major benefits for Columbia River chinook stocks;
- for the first time, bases ocean fishery management on total fishery mortality with limits on incidental mortalities, provides incentives to reduce incidental mortalities (allows 50% of the reduction in incidental mortalities to be taken as landed catch, passing 50% of the reduction onto other fisheries or to spawning escapement), and includes a “payback provision”, requiring reduced catch levels in a fishery the next year if set incidental mortality levels are exceeded;
- allows the NMFS to use retained authority to call for additional reductions in ocean fisheries if necessary to protect listed stocks
- includes “weak stock gate” provisions that will reduce harvest levels across all fisheries (though such reductions may be allocated in southern fisheries to meet treaty/non-treaty sharing obligations) if harvest levels are causing a stock to continue to decline and such reductions will benefit the stock (e.g., meet spawning escapement needs), at this point, these provisions do not create any additional obligations for in-river fisheries for any chinook stocks.

In-River Harvest Strategies

Consistent with the treaties between the United States and the tribes, in-river fisheries are managed to meet treaty obligations to the tribes and to meet agreed spawning escapement goals. The tribes and states as co-managers, with technical support and coordination of the federal trustee agencies, manage in-river fisheries to achieve these twin goals pursuant to conservation standards established under U.S. v. Oregon. These conservation standards define and constrain management actions that would result in restrictions on the use or development of tribal fish resources, the exercise of tribal fishing rights, or which would result in a conservation burden being imposed on a tribe. Additional restrictions on the exercise of treaty fishing rights can only be applied when:

- they are reasonable and necessary for species preservation,
- they are the least restrictive available to achieve the required conservation purpose,
- they do not discriminate against Indian activities, either on their face or as applied,
- their purpose cannot be achieved solely through the regulation of non-Indian activity, and
- voluntary tribal conservation measures are not adequate to achieve the conservation purpose.

Inasmuch as tribal fisheries are only a small portion of the total adult equivalent life cycle mortality, these fisheries should not face additional restrictions until all other non-Indian sources or mortality have been eliminated or have been mitigated by other management actions to maintain stock production and productivity.

In-River Harvest Strategies: Application of U.S. v. Oregon Allocation Principles

- Based upon the adoption of a coastwide abundance based harvest management regime that ensures that across all fisheries conservation and allocation can be met, additional harvest management measures, beyond those included in the new Chinook Chapter of the Pacific Salmon Treaty, are not necessary.

- If the region is to meet its long-term goal of biological diversity by rebuilding weak runs and if it is to provide sustainable and adequate harvest levels for tribal, sport and commercial fisheries, then it must fully implement the provisions of the recent Salmon Treaty Agreement, including the Agreement on Habitat and Restoration. Additional harvest management measures beyond those in the Chinook Chapter and consistent with the conservation and allocation principles of U.S. v. Oregon, may only be required after the full implementation of the 1999 Agreement of the Parties under the Pacific Salmon Treaty.
- All chinook, steelhead and coho that are destined to pass tribal fishing areas are subject to the U.S. v. Oregon conservation and allocation principles. Pursuant to the 1988 Columbia River Fish Management Plan (a negotiated settlement under U.S. v. Oregon), the tribes agreed to manage to certain interim spawning escapement goals and in some cases voluntarily reduce their harvest levels of certain salmon stocks to less than 50% of the harvestable surplus. In other cases, voluntary closures on some fisheries continued in order to provide spawning escapement and to complement unrealized gains from land, water and production reforms and management actions designed to increase salmon production and productivity. Since the 1988 CRFMP terminated on July 31, 1999, only U.S. v. Oregon conservation and allocation standards apply to in-river fisheries management. Under those standards, the tribes may harvest 50% of the surplus of chinook, steelhead, coho, and sockeye returning to the Columbia River basin, calculated on the basis of total adult equivalent lifecycle mortality. These harvest levels are subject to any voluntary management actions the tribes may elect to take after all other sources of mortality have been eliminated or mitigated. The tribes do not believe that the harvest guidelines established by the National Marine Fisheries Service for in-river fisheries are consistent with either the U.S. v. Oregon standards or with the protection and restoration of the salmon resource. The tribes will use NMFS' guidelines solely for planning purposes.

In-River Harvest Strategies: Application of Pacific Salmon Treaty obligations

Additional in-river management obligations that may have been created under the 1999 Agreement under the Pacific Salmon Treaty will be implemented consistent with the U.S. v. Oregon conservation and allocation standards. With respect to in-river fisheries, the Salmon Treaty does not create any new or different harvest obligations for the states or tribes under U.S. v. Oregon. Specifically, recognizing the standard NMFS had previously set for in-river fisheries, Snake River fall chinook was excluded from the stock tables of the new agreement so as to avoid setting new or different standards. In addition, specific ISBM management provisions will not apply as a result of previous voluntary reductions by the tribes and states to ensure the long term conservation of spring and summer chinook stocks. Finally, the “weak stock gate” provisions of the Salmon Treaty, at this point, do not create any additional obligations for in-river fisheries for any chinook stocks.

The Commission then recommended a number of harvest-related measures to be funded and implemented through the program, outlined in Table 1.C.1.1. The Commission also recommended deletion of almost all of Section 8 of the current program, as inconsistent with the trust obligations of the United States, as outlined under U.S. v. Oregon; inconsistent with maintaining the management capabilities of the parties to the Pacific Salmon Treaty; inconsistent with ensuring that other non-fishing factors limiting the production or productivity of the weak and depressed stocks are adequately addressed by management agencies, or supplanted by the 1999 Agreement of the U.S. and Canada under the Pacific Salmon Treaty. Key recommendations indicated by these deletions and other comments include:

- recommendations against further development of selective fishing technologies and terminal fisheries, as inconsistent with treaty and trust obligations if these programs might result in any additional restrictions or impairments of the tribal Zone 6 fishery;

- deletion of provisions calling for marking of hatchery salmon, for same basic reason;
- retention and re-funding of law enforcement provisions.

Finding: The Council did not adopt the Commission's detailed set of text and strategies related to harvest. However, the Council adopted general provisions, in the harvest strategies and elsewhere, that are consistent with and derived from the main substantive points of the Commission's recommendation. In particular, the main focus of the program, as discussed above, is to increase the productivity and abundance of fish and wildlife in large part through protecting and restoring the natural ecological functions and habitats of the Columbia River that sustain these populations. The Council did not explicitly tie the call for habitat protection and restoration to the 1999 Pacific Salmon Treaty agreement on habitat protection and restoration, but there is no reason the activities funded under the program cannot be considered as an aspect of the federal government's implementation of the treaty agreement. In addition, the Council focused its artificial production strategies on supporting its habitat-based program, with a primary strategy of complementing habitat improvements with supplementation in appropriate areas in an effort to rebuild naturally spawning populations.

As for harvesting the fish produced by the river, the Council deferred to the harvest management and allocation efforts of those with jurisdiction over harvest, which is outside the Council program authority, but with the recommended bottom-line that harvest rates and practices need to be based on the escapement required to rebuild and sustain naturally spawning populations. The Council then provided that subbasin plans and hatchery management plans that will be the basis for implementing the Council's program must describe the expected contribution from or impact of harvest; describe a set of habitat, production and harvest activities that are logically related and compatible and that are designed to return adequate numbers of adults to the subbasin to meet goals for protecting and rebuilding the numbers of naturally spawning populations; and not call for the production of fish for harvest that cannot in reality be harvested or produce other significant benefits. The program is not regulating harvest management or trying to force a change in harvest management in any particular direction, it aims only to make clear that the habitat and production objectives and activities in a subbasin plan must be compatible with the harvest regime that will affect those fish or the subbasin plan cannot be adopted as consistent with the program. Abundance-based harvest management programs can, in concept, be consistent with this approach; the details of whether the objectives of a subbasin plan are compatible with a particular type of harvest management plan are to be addressed in the more specific planning phases of the program amendment process.

The Council also adopted a set of recommended monitoring and reporting provisions for the harvest managers that will assist the Council and others in understanding and acting on the relationship of harvest activities to the activities of the program and to the objective of protecting and recovering naturally spawning populations. Finally, the Council did not call for the mass marking of all hatchery fish, for any particular restrictions or limits on or changes to mixed-stock fisheries, or for mandated shifts to different fishing techniques and locations. If the harvest practitioners and managers decide to maintain the same basic fishing techniques and patterns, and work from that base to allocate harvest opportunities consistent with protecting and rebuilding naturally spawning populations, the Council's program calls for nothing different. In that case, the program will be attempting to increase harvest opportunities only by trying to increase the productivity and abundance of fish, especially through protecting and improving habitats and ecological functions. The Council did call for subbasin plans to identify where there might be an opportunity for increased harvest through changes in how harvest currently takes place, which might involve changes in techniques or the development of terminal fisheries. If and only if the relevant managing entities *agree* on the desirability of these changes, then the Council stands ready to commit some of the resources the program can bring to bear on helping to fund the changes that will bring increased harvest opportunities.

The Council concludes that what it adopted is consistent with the fundamental points of the Commission's recommendation. The Council did not object to or reject the details of the recommendation, but did not adopt that detail in part because much of the Commission's recommendation involved harvest management matters outside the scope of the program. Also, as noted before, in this phase of the program amendment process, the Council decided on a consistent and fairly general level of detail for the basinwide objectives and strategies, and so it gleaned from this recommendation and others harvest and other strategies at that level of detail. To the extent the Council rejected aspects of this recommendation, the Council finds that the recommendation would be less effective than what the Council adopted in the protection, mitigation and enhancement of fish and wildlife, Northwest Power Act §4(h)(7)(C), and that the recommendation does not complement the activities and recommendations of the region's other fish and wildlife agencies and tribes as well as what the Council adopted, §4(h)(6)(A), (7), (7)(B).

Source: National Marine Fisheries Service
Recommendation No. 54

Recommendation: The National Marine Fisheries Service recommended the following with regard to harvest:

- Adopt a fast-track review and coordination process for critical harvest management reforms that are needed to avoid jeopardy of ESA-listed species, pursuant to the Endangered Species Act and the FCRPS Biological Opinion. NMFS intends to include implementation of harvest reforms as a reasonable and prudent alternative in the upcoming FCRPS Biological Opinion. This action is viewed as critical to ensuring the survival and recovery of ESA-listed populations until habitat improvements can effectuate needed increases in population productivity. Harvest projects will be designed and implemented to further reduce mortality to listed populations as fishers target more plentiful hatchery stocks. NMFS intends to coordinate these actions with the Council to ensure integration with the Council's program. The Council should anticipate this needed review and coordination and support the process in its program.

Finding: The Council did not adopt this recommendation. What it did adopt, as described above, were more general objectives and strategies calling for harvest rates and practices based on adult escapement objectives designed to protect and recover naturally spawning populations. The Council also called for the identification in subbasin plans and hatchery management plans of opportunities for increased harvest through changes in harvest activities or management, which, if supported by the relevant participants, can become the basis for funding proposals. And the Council called for high priority and other project review processes that can be the vehicle for funding these activities on an expedited or "fast-track" basis if appropriate. The Council does not believe that what it adopted is inconsistent with the underlying substance of this recommendation, but if so, the Council finds that the recommendation would be less effective than what the Council adopted in the protection, mitigation and enhancement of fish and wildlife, Northwest Power Act §4(h)(7)(C), and that the recommendation does not complement the activities and recommendations of the region's other fish and wildlife agencies and tribes as well as what the Council adopted, §4(h)(6)(A), (7), (7)(B).

Source: Bonneville Power Administration
Recommendation No.: 37

Recommendation: Bonneville recommended that in evaluating the impact that harvest has on program activities and vice versa, the Council must apply the conservation principles of U.S. v. Oregon to ensure tribal treaty and trust harvests are the last to be affected. This would comport with the policies of the Administration to curtail other activities that adversely affect salmonids before curtailing tribal harvests.

Bonneville agreed that harvest had many benefits, and that it may properly be determined on the basis of adult escapement. However, given the historical inability of fisheries managers to accurately forecast adult returns, Bonneville recommended that harvest levels must be established with a greater margin of safety in favor of returning listed or weak stocks. To offset the impact to the culture and economics of commercial fishers, both tribal and non-tribal, Bonneville encouraged the establishment of additional selective fisheries.

Finding: The Council adopted harvest strategies and other program provisions relating to recognition of tribal rights and others matters, described in the findings above, that are consistent with the substance of this recommendation.

Source: PNUCC
Recommendation No. 55

Recommendation: PNUCC recommended the following harvest policies and strategies, reacting to proposed language in the Council's Strawman:

- There is an obligation to provide fish and wildlife mitigation where habitat has been permanently lost due to federal hydropower development. In those cases, artificial production will continue to be used to replace capacity and bolster productivity, but this strategy can only be used to the extent that mixed stock harvest pressure on weak naturally spawning anadromous and resident fish populations can be alleviated. Artificial production must include an experimental, adaptive management design to evaluate benefits, address scientific uncertainties, and improve hatchery survival while minimizing the impact on, and if possible benefiting, fish that spawn naturally. This is an important policy statement about the role and risk of artificial production. The linkage between hatchery production and mixed stock harvest must be broken before hatcheries can be used to support harvest objectives.
- Harvest can provide significant cultural and economic benefits to the region, and the program should seek to increase population-specific harvest opportunities based on adult escapement objectives designed to protect and recover natural spawning populations. This will require moving away from mixed stock harvest and toward live capture and release of all non-targeted populations and/or toward terminal fisheries that are highly stock specific. This last sentence is added to define the change that is necessary for the region's harvest policies. While there may be other approaches, we suggest that the Council establish the policy that the region move toward live capture and release in areas where stocks are mixed and to terminal fisheries so that harvest pressures can be focused on hatchery produced fish.
- The overall management philosophy for the region's salmon and steelhead resources will be changed to value over-escapement more highly than over-harvest. Spawmed-out salmon carcasses will be left in the streams to provide a valuable food source for next year's progeny and harvest management practices will be changed to protect naturally spawning populations from uncertainties in harvest management practices.

Finding: The Council adopted objectives and strategies consistent with parts of this recommendation. This includes provisions calling for harvest rates and regimes to be based on population-specific adult escapement objectives designed to protect and recover naturally-spawning populations. Sections III.A.2, III.D.4, III.D.5. It includes harvest strategies requiring that subbasin plans and hatchery management plans contain objectives and strategies for habitat restoration and production activities that are compatible with harvest regimes *and* consistent with the protection and recovery of naturally spawning populations. And it includes provisions for the identification of increased opportunities for harvest that can be funded through the program and for monitoring and reporting actions designed to make clear how harvest interacts with the rest of the program. Section III.D.5.

The Council did not adopt the parts of this recommendation calling for completely severing the link between hatchery production and mixed-stock harvest or forcing a change in harvest management to live capture and terminal fisheries. The actual management of where, when and how fish are harvested is an allocation function that takes place largely outside the scope of the Council's program authority under the Power Act. On the other hand, the Council does have a legitimate concern that the investments of the program and the benefits gained in terms of protecting and improving fish and wildlife populations not be undermined by inconsistent or incompatible harvest practices or rates. So, as described above, the Council focused in the areas that are within the scope of its authority, calling for subbasin and hatchery planning to make sure that habitat and production objectives and activities are compatible with and support natural population rebuilding, and for identification of opportunities for increased harvest that the Council's program can facilitate if a consensus exists among the relevant participants. The Council concludes that what it did adopt is largely consistent with this recommendation, but to the extent there is an inconsistency, the Council finds that the recommendation would be less effective than what the Council adopted in the protection, mitigation and enhancement of fish and wildlife, Northwest Power Act §4(h)(7)(C), and that the recommendation does not complement the activities and recommendations of the region's fish and wildlife agencies and tribes as well as what the Council adopted, §4(h)(6)(A), (7), (7)(B).

Source: Public Power Council
Recommendation No. 52

Recommendation: The Public Power Council is increasingly aware that "success," whether it applies to mitigation for the impact of dams on fish, compliance with the Endangered Species Act, or fulfillment of treaty and trust responsibilities, must include increasing levels of harvest. The Council should take the lead in producing a vision for the region, with specific objectives and strategies, that will provide increasing levels of harvest in the context of the Endangered Species Act.

There are two basic types of salmon science, and the Council may find it useful to distinguish between conservation biology and animal husbandry. Well-qualified scientists in these two distinct disciplines have been talking past each other for years. The Council should take the lead in ensuring that the appropriate science is applied to the appropriate policy visions, strategies and objectives. Growing fish to avoid extinction of ESA-protected populations may involve legitimately different scientific principles than growing fish for human consumption, both for tribal and non-tribal fisheries.

For a sustainable, viable commercial and sport fisheries:

- Utilize production/harvest regimens that minimize impacts on naturally spawning populations, including mixed stock conflicts.
- Implement region-wide and international management of harvest, including ocean.

The Council should consider a moratorium on harvest of listed stocks until delisting, including options that would implement significant harvest reforms. These could include weak-stock escapement-based harvest management combined with known stock targeted terminal fisheries and live capture and release of all unmarked fish that could result in more, not less, harvest of hatchery fish. If selective fisheries are used, it should be made clear to the public, and then all hatchery releases in the basin should be marked so that a known-stock harvest can be implemented.

Hatchery and harvest operations must be coordinated. Three of the four H's (hydro, habitat and hatcheries) are focused on producing more adult salmon and steelhead. However, this year's spring chinook run above Bonneville Dam provides dramatic evidence that having more salmon or steelhead isn't enough -- it doesn't assure success. Having more returning salmon right now (over 160,000 spring chinook have passed Bonneville Dam as of May 11, three times the 10-year average) has not produced progress toward any of the goals stated in the draft Federal All H paper. If the run is bigger next year, the problems will be worse, not better.

It is very evident that there is no production and harvest plan in place that provides for efficient treaty and non-treaty harvest of non-listed salmon when they return in large numbers. The mixed-stock harvest problem now looms as a major impediment to a successful program and the Council can no longer assume that some other agency or process will take care of harvest management. The Council's program will be incomplete unless it outlines the basic elements of success, including production and harvest. The Public Power Council therefore urges the Council to take the lead in formulating a vision that describes what success will look like.

There is no point in spending enormous amounts of time, energy and money on improving salmon habitat in order to produce more salmon if the year 2000 spring salmon return is what we get. This year, many of the returning spring salmon weren't eligible for harvest yet they contributed to increased harvest pressure on listed spring chinook populations and then were deemed unsuitable for spawning by state and federal managers. This is not a result worth pursuing.

There appear to be three basic approaches to resolving the mixed stock harvest problem:

Selective Harvest

A successful selective harvest program could be based on artificial and natural production of salmon with the intent to distinguish between harvestable fish and protected fish. Live catch techniques could include seines, traps, fish wheels and catch-and-release line fishing. Fishers would be able to keep fish marked for harvest (e.g. hatchery stocks) and required to release those protected by the ESA (even down to the smallest population sizes) unharmed. A terminal fishery would be situated (in place and time) to take harvestable, not listed, fish. The purpose of live catch and terminal fisheries would be to allow harvest, when appropriate, of strong, "robust" runs while simultaneously protecting listed natural populations. This would lead to delisting the protected stocks *and* producing the highest levels of harvest.

This strategy has been tried successfully on a limited basis and is theoretically doable on a broader scale, given advances in marking combined with old-fashioned fishing techniques including traps, fish wheels, catch-and-release and use of terminal harvest sites. The distinction between harvestable and protected fish has led to legal challenges such as the dispute between Oregon and several tribes over Imnaha hatchery fish and the implications of this dispute are not clear. The Columbia River Inter Tribal Fish Commission argues that this selective harvest approach will result in disproportionate harm to tribal fisheries. This poses a serious problem for NMFS and the other fisheries managers and federal agencies due to their obligations to the tribes.

“Lumping” with supplementation

Alternatively, a successful production/harvest strategy could be based on

- state of the art artificial production (supplementation) to place adequate numbers of viable fish into the ecosystem;
- modifying the definition of healthy ESUs and/or populations in order to aggregate or “lump” fish populations, including hatchery and naturally spawning fish, together into larger units that could withstand harvest pressures; and
- traditional harvest methods, including gill nets (because the populations would be lumped, or combined, within an ESU, there would be no need to differentiate between hatchery and naturally spawning fish, no need to mark fish as a harvest tool and no point in a selective harvest). If weak, naturally spawning populations were reduced to very low numbers, the (assumed) healthy ecosystem would allow natural populations to recolonize.

This approach could lead to delistings and increased harvest. A number of scientists, however, have expressed serious reservations about this approach, especially regarding the role of artificial production. That debate continues. This approach also appears unworkable if NMFS manages for each (or even most) small population(s) within an ESU because it seems unlikely that enough populations could ever be strong enough to withstand harvest. There are no signs that NMFS is intending to modify its definition of ESUs and populations to the extent necessary to allow this approach.

Reduced mixed stock harvest rates based on weak natural populations

This approach most nearly reflects the status quo (by retaining the current number of populations within ESUs and continuing mixed-stock harvest). Harvest rates would be controlled by the rates that the weakest target populations could tolerate.

This status quo approach could produce truly bizarre situations. For example, if the Snake River spring/summer chinook runs increase as projected next year, and NMFS does not allow an increase in harvest rates (in order to protect weak natural populations), the public and the various harvest groups will probably be very frustrated at the lack of harvest opportunity. In addition, it is conceivable that NMFS and state agencies would intervene to prevent large numbers of hatchery fish from spawning in order to prevent them from swamping natural runs (if the Court allowed them to do so). The result: after finally producing a successful spring chinook run, the fisheries managers announce the fish we all worked so hard to save are unfit for harvest or spawning. This scenario seems to flunk the common sense test and should raise fundamental questions about the efficacy of the overall production/harvest program.

The Public Power Council recommends that hatchery options not be disconnected from the harvest options. There are two competing strategies for production and harvest, and they should be made clear in the program. In the strategy apparently supported by the National Marine Fisheries Service, Washington and Oregon, conservation hatcheries would not have a negative impact on listed populations and might be used to enhance them. Production hatcheries, with marked fish, would be used for harvest when they could do so without violating the Endangered Species Act. The second strategy, supported by CRITFC, would utilize supplementation hatcheries to enhance naturally spawning runs for ESA and harvest purposes. Questions include: will NMFS require the marking of all hatchery fish that are targeted for harvest? How will the funds needed to reform the hatchery system in the region be obtained? Will new hatcheries be constructed to provide for increased harvest opportunities for the tribes? If so, will the historic increase in mixed stock harvest be replaced by new, selective strategies? Will NMFS allow an over-escapement to hatcheries that results in straying of hatchery fish into wild fish spawning habitat?

Finding: The Council adopted provisions throughout the program (described in findings above and below) that are consistent with the substance of the Public Power Council’s recommendation. This includes a program vision of increased harvest opportunities, largely through establishing a Columbia

River ecosystem that sustains an abundant, productive, and diverse community of fish and wildlife by protecting and restoring the natural ecological functions and habitats that abundant populations need. Thus the main focus of the program is to increase the productivity and abundance of fish and wildlife in large part through protecting and restoring the natural ecological functions and habitats of the Columbia River that sustain these populations. In addition, the Council focused its artificial production strategies on supporting its habitat-based program, with a primary strategy of complementing habitat improvements with supplementation in appropriate areas in an effort to rebuild naturally spawning populations.

As for harvesting the fish produced by the river, the Council deferred to the harvest management and allocation efforts of those with the harvest jurisdiction, which is outside the Council program authority, but did call for these harvest rates and practices to be based on population-specific escapement objectives designed to rebuild and sustain naturally spawning populations. Focusing on the matters within its scope of authority, and intending to preserve the connections between habitat improvements, production and harvest, the Council then provided that subbasin plans and hatchery management plans that will be the basis for implementing the Council's program must describe the expected contribution from or impact of harvest; describe a set of habitat, production and harvest activities that are logically related and compatible and that are designed to return adequate numbers of adults to the subbasin to meet goals for protecting and rebuilding the numbers of naturally spawning populations; and not call for the production of fish for harvest that cannot in reality be harvested or produce other significant benefits.

Next, the Council called for the identification of opportunities for increased harvest, including changes in fishing techniques or expansions in the locations for fishing, and if consensus can be reached on these opportunities among the relevant participants to that harvest, the Council will facilitate their implementation and funding through the program. The Council also adopted a set of recommended monitoring and reporting provisions for the harvest managers that will assist the Council and others in being able to understand and act on the relationship of harvest activities to the activities of the program and to the objective of protecting and recovering naturally spawning populations.

The Council did not adopt those aspects of the Public Power Council recommendation that would call for a moratorium or other reductions or limits in harvest, that would force a shift in fishing techniques, or that would require a change in NMFS' ESU policies. These are activities that are largely outside the scope of the Council's program authority under the Power Act. The Council agrees that the current status quo need to change, and that production, harvest, and habitat actions and population objectives need to be better harmonized. Acting within the scope of its authority and calling, especially, for escapement objectives that protect and recover naturally spawning populations, for production activities that are more consistent with harvest and with rebuilding naturally spawning populations, and for subbasin plans and hatchery plans that must be compatible with harvest regimes, the Council has adopted the most appropriate approach for addressing the problems identified by the Public Power Council. The Council concludes that what it adopted is largely consistent with this recommendation, but to the extent there is an inconsistency, the Council finds that what the Council did adopt is more consistent with the scope of the Council's authority under the Act, and that the Public Power Council's recommendation would be less effective than what the Council adopted in the protection, mitigation and enhancement of fish and wildlife, Northwest Power Act §4(h)(7)(C), and the recommendation does not complement the activities and recommendations of the region's fish and wildlife agencies and tribes as well as what the Council adopted, §4(h)(6)(A), (7), (7)(B).

Source: Idaho Water Users
Recommendation No. 18

Recommendation: The Idaho Water Users recommended that population-specific harvest rates should be developed to protect and recover listed species. The Water Users also recommended aggressive harvest strategies, options, and actions especially with respect to fall chinook. Harvest of substantial numbers of listed fish is a perverse policy, particularly as to adults that are killed on their way upstream to spawn. Minimizing harvest until the populations of listed species have recovered is extremely cost-effective relative to the enormous investments and tremendous uncertainties associated with the hydropower (flow augmentation or breaching), habitat, and hatchery options. With respect to tribal fisheries, the Water Users strongly supported pursuit of “additional tributary and other selective harvest opportunities for tribes” and that “selective fishing gear is a promising tool” from Federal Caucus documents.

Finding: Consistent with this recommendation, the Council adopted provisions calling for harvest rates and regimes to be based on population-specific adult escapement objectives designed to protect and recover naturally-spawning populations (whether listed or not), as described above. Sections III.A.2, III.D.4, III.D.5. The Council also called for subbasin plans to contain objectives and strategies for habitat restoration and production activities that are compatible with harvest regimes and consistent with protection and recovery of naturally spawning populations, and for the identification of increased opportunities for harvest, also described above. Section III.D.5. The Council did not adopt the recommendation that the program include aggressive actions to force a change in harvest, to minimize current rates of harvest, or to force fishers to shift to different harvest techniques or different locations for harvesting, as the actual practices and management of harvest are outside of the scope of the Council’s authority under the Power Act and because the information available to Council does not indicate that current in-river harvest mortality is a significant factor in the present status of weak populations. The Council concludes that what it adopted is largely consistent with the underlying substance of this recommendation, but to the extent there is an inconsistency, the Council finds that the recommendation would be less effective than what the Council adopted in the protection, mitigation and enhancement of fish and wildlife, Northwest Power Act §4(h)(7)(C), and that the recommendation does not complement the activities and recommendations of the region’s fish and wildlife agencies and tribes as well as what the Council adopted, §4(h)(6)(A), (7), (7)(B).

Source: Columbia River Alliance
Recommendation No. 39

Recommendation: The Columbia River Alliance recommended:

- Place a moratorium on harvest of wild stocks in the mainstem, with tributary-by-tributary escapement goals for protected wild stocks. Mainstem harvest can be allowed only to the extent that the weakest wild stock subject to protection has adequate spawning escapement for adequate seeding.
- Work toward elimination of ocean salmon harvest, including treaty negotiations with Canada. If each country catches “its own” salmon, search, production and management costs of commercial salmon harvest will decrease, along with political friction. Fishery managers have long recognized that ocean commercial harvest of Columbia Basin salmon makes little economic sense when the fish will return to the rivers at maturity.
- Redirect lower river mixed-stock commercial harvest to terminal harvest away from mainstem migration corridor. No improvement in upriver stocks is possible with present high levels of mixed stock harvest.

- Redirect tribal mixed-stock commercial harvest to selective harvest at fish ladders and terminal harvest in tributaries. Tribal share of harvestable fish can be caught without indiscriminate harvest through hundreds of inriver gillnets.
- Conduct one-time purchase of replacement selective harvest gear for affected harvest interests with monies saved through operational changes at dams. Unify policing functions under *United States v. Oregon* to gain accurate harvest counts, using aerial or satellite-based estimation techniques to corroborate self-reporting by fishermen.

Finding: With a few exceptions, the Council did not adopt these recommended strategies, primarily because the actual management of where, when and how fish are harvested is an allocation function that takes place largely outside the scope of the Council’s program authority under the Power Act. On the other hand, the Council does have a legitimate concern that the investments of the program and the benefits gained in terms of protecting and improving fish and wildlife populations not be undermined by inconsistent or incompatible harvest practices or rates. So, as described above, the Council focused in the areas that are within the scope of its authority, calling for harvest rates and regimes to be based on population-specific adult escapement objectives designed to protect and recover naturally-spawning populations, Sections III.A.2, III.D.4, III.D.5; for subbasin plans to contain objectives and strategies for habitat restoration and production activities that are compatible with harvest regimes and consistent with protection and recovery of naturally spawning populations; for the identification of increased opportunities for harvest that can be funded through the program; and for monitoring and reporting actions designed to make clear how harvest interacts with the rest of the program, Section III.D.5.

The Council concludes that the provisions it adopted are not contrary to the underlying concerns of the Alliance, but in not adopting the specific recommendations of the Alliance, the Council finds that what it did adopt is more consistent with the scope of the Council’s authority under the Act, and that the recommendation would be less effective than what the Council adopted in the protection, mitigation and enhancement of fish and wildlife, Northwest Power Act §4(h)(7)(C), and the recommendation does not complement the activities and recommendations of the region’s fish and wildlife agencies and tribes as well as what the Council adopted, §4(h)(6)(A), (7), (7)(B).

Source: **Inland Ports and Navigation Group**
Recommendation No. **49**

Recommendation: The Inland Ports and Navigation Group recommended that tougher ocean harvest restrictions be enacted. The Council should acknowledge that a “regional” solution must include Canadian and Alaskan interests in harvest, and support a U.S. government-wide effort, led by appropriate senior federal officials, to reduce high-seas harvest.

The group also recommended harvest materials and analyses available to the public be improved. Written material available for public comment dealing with harvest is inadequate, and needs expanding prior to any far-reaching decisions on other alternatives. The Council should support programs that provide more useful information on the history of harvest of Pacific fish species, including commercial ocean and in-river and sportfishing. We urge the Council to incorporate it into all appropriate decision documents used in the region. Our region deserves to know more about how catch forecasts are developed and how accurate those forecasts were, including how the bureaucracy treated those people responsible when forecasts were wrong, so that the catch was too large. Such Council work should include analyses describing the international fisheries management aspect of this issue. Ocean harvest issues cannot be dismissed as difficult, complex and far-reaching. At a time when the federal

Government has under review its own series of recommendations that most people in the region would describe as complex and far-reaching, international harvest issues must be addressed in a more complete manner.

Finding: The Council adopted a set of harvest monitoring and reporting provisions, including for ocean fisheries, consistent with the recommendation here. Section III.D.5. The Council does not have authority to regulate or manage harvest, including ocean harvest. But consistent with the point of this recommendation, the Council called for subbasin and hatchery management plans to explicitly describe the contribution to harvest expected, which would include ocean fisheries; to explain how expected harvest will be consistent with escapement objectives designed to support and rebuild naturally spawning populations; and if inconsistent, how current regimes will be adjusted to achieve the objectives. Section III.D.5. If implemented, the program should assist in reducing any ocean fisheries impacts that are adverse to population rebuilding.

Source:	Sierra Club -- Columbia Basin Field Office
Recommendation No.	27
Source:	Save Our Wild Salmon
Recommendation No.	29

Recommendation: The Sierra Club and Save Our Wild Salmon recommended:

- Maintain harvest for American Indian tribes consistent with treaty rights.
- Establish harvest rates and regimes for adult escapement for wild fish populations, and assure harvest plans which meet these escapement requirements.

The Sierra Club added:

- Promote selective harvest targeted on hatchery fish.
- Provide strategic investments in new techniques to implement selective harvest.

Finding: The Council adopted these recommendations. The vision for the new program includes providing abundant opportunities for tribal treaty and trust harvest. Section III.A.1; *see also* Section VII.1. Subbasin plans and hatchery and harvest management plans are to harmonize harvest and production for harvest with rebuilding naturally spawning populations in part through setting harvest rates and regimes based on population-specific adult escapement, Section III.A.2 (twelfth assumption), III.D.4, D.5. Finally, the program calls for identifying opportunities for increased harvest, including identifying and proposing for funding new techniques to establish the feasibility of selective harvest techniques. Section III.D.5

3(c)(iv) Strategies and implementation standards for hydrosystem operations

Source: National Marine Fisheries Service
Recommendation No. 54

Recommendation: The National Marine Fisheries Service recommended that hydropower strategies apply to the entire Federal Columbia River Power System as well as to specific FCRPS projects and reservoirs. NMFS will address implementation standards for hydrosystem management, water management and mainstem passage in its 2000 FCRPS Biological Opinion.

Finding: The scope of the hydrosystem strategies in the revised program is consistent with this recommendation. The Council adopted system-wide strategies in this phase of the program revision. Specific measures, including measures for individual FCRPS projects and reservoirs, were not adopted in this phase, but will be the subject of the subsequent consideration and adoption of a mainstem plan. Sections III.D.6, VIII.1.

The Council provided that specific objectives and measures in the Council's mainstem plan will be coordinated generally with the mainstem and hydrosystem standards and actions to be contained in the National Marine Fisheries Service's and U.S. Fish and Wildlife Service's biological opinions. The Council also recognized that the federal agencies operating the hydrosystem will have some flexibility in implementing the conditions imposed under the Endangered Species Act, and noted as well that the Council has a responsibility under the Power Act to be concerned about the effects of hydrosystem operations on all fish and wildlife, not just those listed under the Endangered Species Act. Thus the Council's mainstem plan may include biological objectives and measures for mainstem operations that address statutory obligations and conditions other than those regulated under the Endangered Species Act. Section III.D.6.

Source: Oregon Department of Fish and Wildlife
Recommendation No. 26

Recommendation: Oregon recommended that as mitigation for anadromous fish losses caused by the development and operation of the hydroelectric dams, the Council should retain and expand measures in the existing program that improve flow and velocity, keep water temperatures within water quality standards, maximize passage efficiency and survival at dams and through reservoirs, and reduce predation.

Finding: Following Oregon's and others recommendations, the Council provided that the underlying basis for the biological performance objectives for the program are the losses of anadromous fish and other fish and wildlife caused by the development and operation of the hydrosystem. Collectively, specific biological objectives should represent what is considered to be mitigation for these losses. Section III.C.2.a. The hydrosystem strategies should then guide decisions on the kinds of actions that are necessary, collectively, to achieve this underlying mitigation objective.

The Council neither accepted nor rejected the other part of this Oregon recommendation, concerning measures. At this stage in the program revision process, the Council described a set of general biological and policy principles for guiding decisions on more specific actions for operating the hydrosystem to protect, mitigate and enhance fish and wildlife. These include strategies concerning water management, passage and other matters identified by Oregon as relevant, but do not include specific

measures. Section III.D.6. What are the appropriate measures consistent with these strategies to achieve the mitigation objectives of the program will be the subject of the subsequent program amendment process to add a mainstem plan to the program. Sections III.D.6, VIII.1. The measures in the 1994-95 program remain part of the program in the interim. Section IX. The Council did recommend that the operating agencies -- Bonneville, the Corps of Engineers and the Bureau of Reclamation -- "not move forward with previously called-for but unimplemented measures in Sections 5 and 6 of the 1994-1995 Fish and Wildlife Program relating to hydrosystem operations, including specific flow augmentation measures, except to the extent the measures are fully consistent with the hydrosystem strategies" adopted in this phase of the program amendment process. Section III.C.6.

Source: Oregon Department of Fish and Wildlife
Recommendation No. 26

Recommendation: Oregon then recommended that the Council and others, in developing and implementing passage and water management strategies, apply the following standards:

- Federal hydrosystem operations and structures should provide fish passage conditions that maximize survival of all species and stocks over the full range of life-history types in the basin. This may require multiple passage solutions at a project.
- Federal hydrosystem operations and structures should provide fish passage that is consistent with the behavior and ecology of all species, stocks and life-history types using the river system and that mimics the natural situations and processes that these populations encountered in their evolutionary history.
- Project passage survival of juveniles should be maximized through strategies aimed at minimizing delay at dams and migration time, minimizing entrainment through turbines, improving survival of turbine-entrained fish, reducing dissolved gas levels under spill operations, and reducing predation-caused mortality. Spill should be maximized at each project, 24 hours per day, within standards set by the water quality agencies. Expedited schedules should be established to design and install bypass improvements including re-location of bypass outfalls, extended screens, surface bypass systems, gas abatement structures, and turbine modifications to improve efficiency. Harvest programs to reduce predator populations by 10-20% should continue and different technologies to increase harvest rates should be explored.
- Maximize in-river passage survival of adults by minimizing delay and reducing pre-spawning mortality. Project passage survival of adults should be maximized through strategies designed to minimize delay and fallback. Establish expedited schedules to design and install passage improvements to fish ladders including modification of ladder exits, additional ladders, and auxiliary water systems for attraction flows. Continuously operate facilities according to established criteria, operate turbines within 1% of peak efficiency, eliminate power peaking and zero flow operations. Continue cool water releases from Dworshak.
- Projects and facilities should be operated such that no more than 50% of juvenile fish are transported to address the considerable uncertainty with survival of transported fish. In addition, transport and other facilities should be modified to allow full-flow bypass and off-line juvenile sampling to maximize survival of bypass collected fish.
- Maximize in-river survival of juveniles by augmenting flows and reservoir drawdowns. Establish flow targets for spring and summer migrants for the Columbia and Snake rivers using flow targets in the 1995 Biological Opinion as minimum flows. Establish flow targets for other listed species and non-listed species. Incorporate flow requirements for fish in hydro planning as hard constraints and as project rule curves to insure that flow targets are met on a consistent basis. Operations should provide a high probability of meeting flow targets each year on a weekly basis.

Continue reservoir drawdowns in the Snake River to minimum operating pool as a strategy to improve in-river passage conditions.

- Assess the feasibility of reestablishing anadromous fish passage into blocked areas, and where feasible, promote development and implementation of reintroduction programs.

Finding: The Council adopted parts of this recommendation, as explained here. As part of the primary strategies for hydrosystem operations, the Council called for providing conditions within the hydrosystem for adult and juvenile passage that most closely approximate the natural physical and biological conditions, including protecting biological diversity by benefiting the range of species, stocks and life-history types in the river, favoring solutions that best fit natural behavior patterns and river processes, and recognizing that multiple passage methods may be necessary at individual projects to realize these objectives. Survival in the natural river is to be the baseline against which to measure the effectiveness of passage methods. Section III.D.6. The Council then included general strategies concerning juvenile and adult passage consistent with the primary strategy, touching on matters such as continued testing of surface bypass systems, relocation of outfalls to reduce predation and other adverse effects to juveniles, turbine modifications to improve juvenile survival, adult passage improvements and temperature reductions, and combining and improving in-river juvenile migration with the use of transportation in an endorsement of the “spread the risk” concept. *Id.*

With regard to water management, the Council adopted a set of general principles emphasizing managing the hydrosystem toward reestablishing natural river processes where feasible, with patterns of water flow that more closely approximate the natural hydrographic pattern than at present. Changes in water management should be based on fish and wildlife benefits, and operators need to assure that flow and spill operations are optimized to produce the greatest biological benefits with the least adverse effects while at the same time assuring the region an adequate, efficient, economical and reliable power supply. *Id.*; *see also* Sections III.A.2 (fifth, sixth, seventh and ninth planning assumptions), III.C.2.b and Appendix D (third objective). Findings elsewhere explain how the Council responded generally to recommendations from Oregon and others concerning water quality and water quality standards. Finally, provisions in other parts of the program call for assessing the feasibility of reestablishing anadromous fish passage into blocked areas. Sections III.A.2 (tenth planning assumption), III.C.2.a.2.

The Council did not reject the parts of this recommendation that it did not adopt. These are the more specific recommendations for objectives and measures or actions, such as 24-hour spill, 10-20% reductions in predation, flow targets and reservoir drawdowns, the specific ratio of inriver to transported fish, specific configuration of transport facilities, and so forth. Nothing the Council adopted is necessarily inconsistent with these recommendations, but specific objectives and measures will be the subject of the subsequent program amendment process to add a mainstem plan to the program. Sections III.D.6, VIII.1.

Source:	Burns-Paiute Tribe
Recommendation No.	34
Source:	Shoshone-Bannock Tribes
Recommendation No.	38
Source:	Washington Department of Fish and Wildlife
Recommendation No.	43
Source:	U.S. Fish and Wildlife Service
Recommendation No.	46

Recommendation: These fish and wildlife agencies and tribes recommended the following set of strategies and standards regarding juvenile and adult passage and water and hydrosystem management:

Standards for mainstem passage

Two biological principles in particular should become the dominant focus of decisions about how to improve fish passage through the hydrosystem:

1. ***protect biodiversity*** -- passage solutions must be designed to benefit the range of species, stocks and life-history types in the river, which may require multiple passage solutions at a project, and
2. ***favor passage solutions that best fit natural behavior patterns and river processes*** -- the best passage solutions are those that take into account and work with the behavior and ecology of the species and life-history types using the river system, that mimic the natural situations and processes that emigrating salmonids encountered in their evolutionary history.

The two principles are linked. Technologies that most closely approximate the natural physical and biological conditions of migration would seem most likely to accommodate diverse species/stocks. Thus, actions to improve juvenile and adult fish passage through mainstem dams, including fish transportation actions, should protect bio-diversity by benefiting the range of species, stocks and life-history types in the river, and should favor solutions that best fit natural behavior patterns and river processes. Unimpounded river should be the baseline against which to measure the effectiveness of other passage methods.

Implementing these standards for mainstem passage

The Corps of Engineers, FERC, other federal agencies and privately licensed hydro operators that participate in and ultimately make decisions on mainstem passage modifications must take into account these standards and principles recommended above to the fullest extent practicable at every stage when considering and deciding upon operational and structural passage improvements. The Council should recommend that these agencies ensure that their decision-making processes and criteria are consistent with these standards and principles stated in the last section. This means developing project ranking criteria and budget decision explanations that are consistent and responsive to all of the standards and principles. Foremost are the two core themes of protecting biodiversity and implementing passage solutions that favor natural behavior patterns and river processes. Most importantly, passage standards, objectives, designs and evaluations should all focus on protecting the wide array of species and life history types in the river, not just a statistical measure of central tendency for the most abundant species. Passage standards, objectives, designs and evaluations, and must ultimately be related to increases in adults back to the spawning grounds, not just the survival of juveniles or adults through the federal Columbia River hydropower system.

For these reasons, the Council should request that the Corps of Engineers, FERC, Bonneville and private hydro operators working within the regional prioritization process, report to the Council and the region on how the prioritization criteria and other decision-making standards for passage improvements are being revised to be consistent with the principles here. To further the implementation of these principles, the Council:

- should expect that the Independent Scientific Review Panel (ISRP) and/or the Independent Scientific Advisory Board (ISAB) will apply the standards and principles during the Panel's review of the reimbursable portion of the Bonneville fish and wildlife budget, which includes the Corps' Columbia River Juvenile Fish Mitigation Program;
- will itself apply these standards in its review of any ISRP report and resulting recommendations to Congress on these passage budget items; and
- will recommend to Congress, in its reimbursable budget recommendations, that budget requests from the Corps of Engineers and other appropriate federal agencies be evaluated for consistency with these standards and principles.

Standards for water and hydrosystem management (Washington did not include these strategies)

- System-wide water management, including flow augmentation from storage reservoirs, should be balanced to address identified needs of anadromous species while limiting effects on resident species.
- Where practicable, the program should include specific performance standards which cumulatively with the other measures achieve survivals needed to ensure recovery of ESA populations and achieve biological goals for all fish populations. The hydrosystem Biological Opinion will set those standards to achieve ESA objectives and meet CWA standards. The program should set higher mitigation objectives. (The Fish and Wildlife Service included only the first sentence.)

Finding: The Council adopted the passage and systemwide water management strategies. Section III.D.6; *see also* Section III.A.2 (fifth, seventh and ninth planning assumptions). Specific performance standards -- or biological objectives -- will be a subject of the mainstem plan phase of the program amendment process. Consistent with the recommendation, the Council said it will adopt biological objectives and strategies to address the needs of *all* fish and wildlife adversely affected by the hydrosystem, including but not limited to ESA-listed stocks.

Source: Columbia River Inter-Tribal Fish Commission
Recommendation No.: 40

Recommendation: The Commission summarized its hydro operations recommendations in this way: Meet the 2-6% smolt-to-adult performance standard established by the fishery agencies, including the National Marine Fisheries Service, by utilizing a normative hydrograph, and appropriate passage measures, and protecting and restoring mainstem/estuary habitat.

The Commission recommended the following hydrosystem strategies from the tribal vision statement:

- Operate the hydrosystem, as it is configured now or in the future, to:
 1. Maximize in-river juvenile anadromous fish survival and health consistent with reservoir operations established in the Council's fish and wildlife program;
 2. Maximize adult anadromous fish health, survival and spawning capacity;
 3. Maintain, protect and enhance currently healthy natural riverine conditions and habitat; and
 4. Restore, rebuild and reclaim such conditions and habitat where they have been altered or destroyed
- Stop barging and trucking juvenile salmonids
- Remove existing extended-length turbine intake screens; halt installation of new screens and consider removing existing standard length screens
- To satisfy the above criteria, incorporate the following measures in hydrosystem operations and management:
 1. Augment and manipulate flows and storage volumes when necessary to more closely approximate the natural, historic river hydrograph;
 2. Relax and seek flexibility in rigid flood control rule curves to recreate normative hydrographs and reclaim floodplain habitat;
 3. Spill and/or surface bypass to achieve 80% Fish Passage Efficiency (FPE) or better through non-powerhouse routes;
 4. Turbine operation within 1% of peak efficiency;
 5. Reduced water level fluctuations from power peaking operations;

6. New and/or improved turbine technology and efficiency;
 7. Predator reduction and abatement;
 8. Water temperature and total dissolved gas reduction and abatement to comply with the federal Clean Water Act;
 9. Additional adult fish ladders, new designs and structural improvements to existing ladders and improved maintenance of existing ladders;
 10. Restrict new dredging and improve existing dredging management practices and;
 11. 24-hour video fish counting
- Restore natural river levels, conditions and habitat in the Lower Snake River by removing the earthen embankments at Ice Harbor, Lower Monumental, Little Goose and Lower Granite dams, and mitigate for the economic and other short-term impacts that will occur; draw down Lower Granite reservoir to 710 feet (spillway crest) until embankment removal is accomplished
 - Draw down the reservoir behind John Day Dam to Minimum Operating Pool (MOP) immediately, and to spillway crest or natural river level, on a year-round basis, in the near-term
 - Manage water resources to more closely mimic the natural, historic river hydrograph (for example, through improved utilization of water from Canadian storage, Banks Lake and various irrigation projects) but maintain, to the maximum extent practicable, full, stable water levels in Lake Roosevelt and in Libby, Dworshak and Hungry Horse reservoirs according to their Integrated Rule Curves and consistent with the Council's fish and wildlife program
 - Develop juvenile and adult anadromous fish passage capabilities, employing any and all possible biological, engineering/technological, legal, political and societal means, to circumvent the current artificial barriers to anadromous fish migration at Chief Joseph and Grand Coulee dams, Dworshak Dam and the Hells Canyon Complex (Hells Canyon, Oxbow and Brownlee dams)
 - Protect critical estuary habitat and restore former estuary habitat
 - Improve water quality in the mainstem Columbia and Snake Rivers by reducing or eliminating toxic pollution sources and other contaminant discharges in compliance with applicable water quality criteria (at a minimum)
 - Designate the Hanford Reach of the Columbia River under the federal Wild and Scenic Rivers Act, and re-establish normative river conditions there
 - Protect, mitigate and enhance resident fish populations negatively affected by construction and operation of dams, including impacts from water releases from storage projects, altered annual flow regimes, daily load following, temperature modifications and nutrient trapping, to the maximum extent practicable

The Commission also recommended the following standards for mainstem passage and habitat:

- Restore normative river conditions to provide spawning, resting, and rearing habitat for salmon and steelhead in the mainstem of the Columbia and Snake Rivers by 2006.
 1. Provide 9,000 acres of spawning habitat for Snake River fall chinook by 2006.
 2. Provide 40 miles of fluvial spawning habitat for mid-Columbia fall chinook core populations identified by the Independent Science Advisory Board in *Return to the River* by 2008.
 3. Provide a mainstem hydrograph that resembles the shape of the normative hydrograph at all major river points.
 4. Provide 150 square miles of sockeye lake rearing habitat
- Ensure 80 percent Fish Passage Efficiency for juvenile and adult anadromous fish between 2001 and 2004, and 90 percent Fish Passage Efficiency after 2004. Fish Passage Efficiency is defined as passage through a hydroelectric project by non-power house routes.
- Take progressive actions to meet the gas supersaturation and temperature standards under the Clean Water Act by 2006.
- Eliminate stranding and other problems associated with fluctuation of flows from the hydroelectric system.

- Reduce the travel time for migrating salmon and steelhead while protecting resident fish.
- Reduce adult delay and prespawning mortality by 50% by 2006.
- Increase smolt to adult returns of all salmon and steelhead stocks to 2-6% by 2006.
- Assess basin lamprey and sturgeon population status and take hydrosystem and mainstem actions to restore these populations.

Two biological principles in particular should guide decisions to meet these fish passage and mainstem habitat standards for through the hydrosystem:

- *protect biodiversity* -- passage solutions must be designed to benefit the range of species, stocks and life-history types in the river, which may require multiple passage solutions at a project, and
- *favor passage solutions that best fit natural behavior patterns and river processes* -- the best passage solutions are those that take into account and work with the behavior and ecology of the species and life-history types using the river system, that mimic the natural situations and processes that emigrating salmonids encountered in their evolutionary history.

The two principles are linked and provide a “fundamental conceptual framework” necessary for restoration of salmon and other anadromous fish stocks as stated in *Return to the River* (Williams et al. 1996) and the ISAB’s Review of the Corps of Engineers’ Columbia River Juvenile Fish Mitigation Program (ISAB 1999). Technologies that most closely approximate the natural physical and biological conditions of migration would be most likely to accommodate diverse species/stocks. Thus, multiple passage systems are necessary to fully protect all anadromous stocks that pass through dams and impoundments. For example, surface orientated bypass systems take advantage of the natural tendency for yearling smolts to pass dams near the surface, while passage systems other than screens and turbines must be developed to pass juvenile lamprey and subyearling chinook that pass dams lower in the water column.

The Corps of Engineers, FERC, other federal agencies and privately licensed hydro operators that participate in and ultimately make decisions on mainstem passage modifications must take into account these standards and principles recommended above to the fullest extent practicable at every stage when considering and deciding upon operational and structural passage improvements. The Council should recommend that these agencies ensure that their decision-making processes and criteria are consistent with these standards and principles stated in the last section. This means developing project ranking criteria and budget decision explanations that are consistent and responsive to all of the standards and principles. Foremost are the two core themes of protecting biodiversity and implementing passage solutions that favor natural behavior patterns and river processes. Most importantly, passage standards, objectives, designs and evaluations should all focus on protecting the wide array of species and life history types in the river, not just a statistical measure of central tendency for the most abundant species. Passage standards, objectives, designs and evaluations, and must ultimately be related to increases in adults back to the spawning grounds, not just the survival of juveniles or adults through the federal Columbia River hydropower system.

For these reasons, the Council should request that the Corps of Engineers, FERC, Bonneville and private hydro operators working within the regional prioritization process, report to the Council and the region on how the prioritization criteria and other decision-making standards for passage improvements are being revised to be consistent with the principles here. To further the implementation of these principles, the Council:

- expects that the Independent Scientific Review Panel (ISRP) and/or the Independent Scientific Advisory Board (ISAB) will apply the standards and principles during the Panel’s review of the reimbursable portion of the Bonneville fish and wildlife budget, which includes the Corps’ Columbia River Juvenile Fish Mitigation Program;

- will itself apply these standards in its review of any ISRP report and resulting recommendations to Congress on these passage budget items; and
- will recommend to Congress, in its reimbursable budget recommendations, that budget requests from the Corps of Engineers and other appropriate federal agencies be evaluated for consistency with these standards and principles.

The Commission then recommended the following mainstem flow strategies and standards, based on the “normative river hydrograph concept” (narrative not included):

- Shape runoff and storage to create a normative hydrograph, with a peak that is timed to that of predevelopment runoff at each one of the three major river points: Lower Granite, Priest Rapids and The Dalles. The existing federal operating strategy of seasonal, flat target flows fails to protect salmon in the early portions of the emergence and migration periods before April 10 and after the planning date of August 31. Figure 1 illustrates the difference between the existing operations strategy of seasonal flat flows and the same volumes of water shaped to meet a normative hydrograph for an average runoff year of 100 maf at The Dalles. Figures 2-4 illustrate how existing storage can be shaped with runoff at specific points in the river to accomplish this recommendation in low, medium and high flow years. [Figures not included here.]
- Augment mainstem flows with 1 maf from Canadian Storage, 0.25-0.5 maf from Banks Lake and the Columbia Basin Irrigation Project and 1.0-1.5 maf from the upper Snake.
- Relax and seek flexibility in rigid and conservative flood control rule curves to recreate normative hydrographs and reclaim floodplain habitat by achieving a 20% reduction in flood control storage by 2006.
- Reduce flow and water level fluctuations from power peaking operations; limit power peaking to plus or minus 10% of daily average flows over a 24 hour period.
- Achieve a peak hydrograph of at least 415 kcfs at The Dalles.
- Limit chum spawning, incubation and early emergence flows below Bonneville Dam to 125 kcfs.
- Maintain flows at the Hanford Reach at no more than 70 kcfs during daylight hours and nighttime moonlight hours of the adult bright fall chinook spawning period (approximately October 20- November 22).
- Assure, with the assistance of the Mid-Columbia PUDs, that Hanford fall chinook fry are provided with an increasing hydrograph from March 15- June 20 as measured on a daily basis.
- The region must substantially modify its current flow management strategy based upon seasonal targets that are not met on a weekly and daily basis. The federal operators should reshape river runoff to a normative hydrograph as recommended by the ISG (Williams et al. 1996) and CRITFC (1998; 2000), using state-of-the-art forecasting tools and a sliding scale appropriate for the runoff year. Normative hydrograph flows for an average water year for key river index points is presented in Table 1 C.2.1:

Flow (kcfs)	Lower Granite	Priest Rapids	The Dalles
January	34	70	125
February	36	70	125
March 1-15	42.5	70	135
March 16-31	52.5	90	165
April 1-15	65	120	210
April 16-30	85	160	265
May 1-15	120	200	340
May 16-31	110	260	390
June 1-15	105	300	415
June 16-30	90	270	380
July 1-15	55	220	285

July 16-31	47.5	185	240
August 1-15	42.5	160	210
August 16-31	40	140	190
Sept. 1-15	35	120	160
Sept. 16-30	30	90	125
October	20	80	110
November	30	70	125
December	30	70	125

The sliding scale is described below. Percentages above and below average flows described in Table 1 were derived from the ratios between historical high, medium and low flows at each individual river index point.

- Use a sliding scale flow augmentation target at The Dalles based on The Dalles April 1, April-September volume runoff. This period is used because of later summer snowmelt in the upper Columbia. For volume forecasts between 85 and 99 maf, use Normative Flow values (see below). For volume forecasts above 99 maf, use the 120% of the Normative Flows. For volume forecasts below 85 maf, use 80% of the Normative Flow values presented in Table 1. The priority for releasing water from upstream reservoirs for flow augmentation is Grand Coulee, Libby and Hungry Horse.
- Use a sliding scale flow augmentation target at Priest Rapids based on the Rock Island April 1, April-September volume runoff. This period is used because of later summer snowmelt in the upper Columbia. For volume forecasts between 55 and 70 maf, use the Normative Flow values presented in Table 1. For volume forecasts above 70 maf, use the 120% of the Normative Flows. For volume forecasts below 55 maf, use 83% of the Normative Flows. The priority for releasing water from upstream reservoirs for flow augmentation is Grand Coulee, Libby and Hungry Horse.
- Use a sliding scale flow augmentation target at Lower Granite based on the Lower Granite April 1st, April-July volume runoff. April-July is used for Lower Granite because of an earlier runoff timing in the Snake Basin. For volume forecasts between 16 and 22 maf, use the Normative Flow values. For volume forecasts above 22 maf, use the 130% of the Normative Flows. For volume forecasts below 16 maf, use 75% of the Normative Flows.
- The planning date for the salmon migration period should be modified to begin on March 20, and end on September 30 as important life history components of listed stocks (i.e.: subyearling and early yearling spring chinook; adult spring chinook migrating in the Snake and Mid and Lower Columbia River) are migrating at this time and need protection. The federal operators should provide flows for these salmon based on Table 1 C.2.1.

The Commission recommended the following flood control flexibility strategies:

- The Corps should relax and seek flexibility in rigid, overly conservative, flood control rule curves to recreate normative hydrographs, reclaim mainstem and estuarine floodplain habitat and assure that storage reservoirs meet biological criteria. Flood control flexibility will aid in establishing a normative hydrograph by allowing more reservoir storage and create additional critical habitat for anadromous fish production. Flexibility in flood control would also increase the probability that storage reservoirs can remain fuller for resident fish production.
- Flood peaks and floodplain habitat are key factors regulating the existence and productivity of fish populations.
- The biological opinion calls for the Corps and Reclamation to evaluate flood control operations, including the utility of John Day drawdown, to gain flexibility in flows and other river operations for listed salmon. The Corps' preliminary report, Variable Q, failed to adequately address John Day drawdown flood control and adjustments to system flood control that would result in significantly increased flows for listed salmon. Despite these deficiencies, the Variable Q Report concludes that flood control flexibility would benefit flows for anadromous fish and assist in

securing higher reservoir elevations for resident fish. The FCRPS 1998 supplemental biological opinion calls for a status report on these flood control actions by summer of 1998. To date, no status report has been completed.

- The Variable Q Report states that the Corps was authorized by Congress in 1950 and 1962 to provide protection to damage centers in the lower Columbia and Willamette rivers from flows up to 800 kcfs as measured at The Dalles, Oregon. This authorization was based upon protection of the Congress authorized levee system that allows floods up to 800 kcfs to cover riparian areas. The Corps, however, attempts to operate the Columbia River to a regulated flow of 450 kcfs at The Dalles (a control point of 330-350 kcfs) and protect developed floodplain areas that are not protected by federally authorized levees. Thus, the Corps has no Congressional authorization to be restricting the river flows to 450 kcfs at The Dalles. The Corps decision to eliminate tens of thousands of acres of critical steelhead and salmon habitat by this operation has never been subject to environmental review or consultation with the region. Further, it has not been considered in either of the FCRPS biological opinions. Reduction and removal of floodplains from the river environment is perhaps the leading cause of the significant reduction or even elimination of fish populations in large river system worldwide.
- Corps has flood control authority over joint Reclamation reservoirs for 3.4 maf of active water storage and the Corps has and has similar authority for flood control in Dworshak reservoir for 2 maf of storage. The Corps, in coordination with British Columbia Hydro, has about 20.5 maf of flood storage in Canadian reservoirs under the Columbia River Treaty. The Corps has authority for about 13.3 maf of flood control in Hungry Horse, Libby and Grand Coulee reservoirs. Flexibility in flood control operations by using state-of-the-art forecasting tools provided by the National Weather Service would allow additional water to be stored in the winter months to make additional flows possible for spring and summer chinook.
- Between 1-3.5 million acre feet of water could be made available for spring and summer salmon migrations basin wide, by incorporating more flexible flood control management. The analyses show that the flexibility in flood control required to obtain the additional flows would not increase the probability of flooding downstream areas in all but the highest runoff years. The Corps and the region should consider restriction of development in flood plain areas. In other U.S. river basins, development is being relocated out of floodplains to allow reestablishment of critical fish and wildlife habitat.

The Commission also provided a fully marked-up revision of Sections 5 and 6 of the existing program. It is not possible to summarize all of the recommended changes here; comprehensive sets of standards and strategies are emphasized. These standards and strategies overlap greatly with what has been recommended above, but they also differ in certain ways, and are more extensive:

Biological Objectives for Mainstem Passage and Habitat

- Increase smolt-to-adult return rates to 2-6 percent for basin salmon and steelhead by 2006.
- Reduce pre-spawning mortality and adult delays by 50 percent by 2006.

Performance Standards for Mainstem Passage and Habitat

- Restore normative river conditions to provide spawning, resting, and rearing habitat for salmon and steelhead in the mainstem of the Columbia and Snake Rivers by 2006.
 1. Provide 9,000 acres of spawning habitat for Snake River fall chinook by 2006.
 2. Provide 40 miles of fluvial spawning habitat for mid-Columbia fall chinook core populations identified by the Independent Science Advisory Board in *Return to the River* by 2008.
- Provide a mainstem hydrograph that resembles the shape of the normative hydrograph.

- Ensure 80 percent Fish Passage Efficiency between 2001 and 2004, and 90 percent Fish Passage Efficiency after 2004. Fish Passage efficiency is defined as passage through a hydroelectric project by non-power house routes.
- Meet the gas supersaturation and temperature standards under the Clean Water Act.
- Eliminate stranding and other problems associated with fluctuation of the hydroelectric system.
- Reduce the travel time for migrating salmon and steelhead while protecting resident fish.
- Cease juvenile transportation. Evaluate and compare direct and indirect mortality for juvenile salmon passing through screen systems and over spillways and sluiceways. Spread the risk by removing half of the turbine intake screens from turbine units.

Implementation of these performance standards and biological objectives should favor passage solutions that best fit natural behavior patterns and river processes--the best passage solutions are those that take into account and work with the behavior and ecology of the species and life-history types using the river system. The life history types that now use the river system are not necessarily all of those that would be desirable in a restored system. To the extent that significant life-history types have been lost through watershed degradation and alteration of the mainstem passage conditions, future mainstem passage conditions should not simply be attuned to matching the needs of those life history characteristics that have managed to adapt to adverse conditions.

Strategies

The following strategies are designed to achieve the performance standards and biological objectives. They are necessary to meet survival rates for anadromous fish at each different life stage. The key to accomplishing the tribal vision for basin-wide anadromous fish restoration is achieving survival rates for each life history stage that are expressed by tribal strategies in *Wy-Kan-Ush-Mi Wa-Kish-Wit*. Adaptive management of different strategies and actions with increased scientific knowledge are also important elements to realize the tribal vision.

Mainstem passage and habitat strategies:

- Emphasize healthy rivers and watersheds with abundant and diverse species assemblages and their management, maintenance and restoration, with particular attention to ecosystem diversity, productivity and stability
- Emphasize natural production provided by such rivers and watersheds
- Reintroduce and restore anadromous fish to the rivers and streams that historically supported them, in numbers sufficient to provide for the needs of the ecosystem and people, in perpetuity.

Flood control flexibility strategies/actions:

- The Corps shall implement necessary flood control flexibility to meet reservoir elevation objectives described in the next section and normative hydrograph index points described above to meet at least a 415 kcfs peak at The Dalles in early June for average and above average runoff years. The Corps shall seek flexibility in flood control in storage reservoirs basinwide, including the Hells Canyon Complex. The Corps shall manage late fall and winter flood control releases of Bureau of Reclamation storage in upper Snake reservoirs during late August and September to augment flows for adult fall chinook and steelhead. Data from Reclamation indicates that many upper Snake Reservoir storage are near full during the late summer and fall months and must be excavated for flood control in the winter.
- Bonneville shall purchase of at least 0.5-1 maf of flood control storage space from Canadian entities. This space will be used to store water to create the normative hydrograph and to assure that storage reservoirs meet IRC and other biological criteria.
- The Corps shall implement a basin wide review of flood control focusing on additional flood control flexibility. This review shall be completed by the end of 2003.

Reservoir storage and flow augmentation strategies/actions

- Reservoir storage should be managed to meet normative hydrograph objectives, IRCs and other biological criteria. Flood control flexibility and augmentation of flow from irrigation sources and flood control storage space are necessary to meet normative hydrograph and reservoir elevation objectives.
- The normative river concept calls for stabilizing upper storage reservoirs by utilizing integrated rule curves and other biological curves established for Libby, Hungry Horse, Dworshak and Lake Roosevelt consistent with the findings of the ISAB in *Ecological impacts of the flow provisions of the Biological Opinion for endangered Snake River salmon on resident fishes in the Hungry Horse, and Libby system in Montana, Idaho and British Columbia* (Report 97-3; ISAB 1997).
- Under current storage reservoir management by the federal operators, storage reservoir and flow objectives are not being met. For example, in 1998, the Grand Coulee storage elevation of 1280 mean sea level (msl) by April 10 was not met, as called for by the Biological Opinion. Flows during the spring chinook and summer chinook and steelhead migration were short nearly 1 million acre feet (maf) of storage because of this action.
- The 1995-1998 FCRPS Biological Opinion also calls for Reclamation to take all reasonable steps to secure additional volumes of water in the upper Snake River beyond the 427 thousand acre feet (kaf) after 1998. In 1997, operation of the Hells Canyon Complex prevented passing the full 427 kaf through the Complex to provide salmon flows. Further, NMFS was to conduct a study with the FERC licensee of the Complex to consider adjustments to project operations to assure that the 427 kaf would be passed through for salmon. NMFS consultation with FERC on this issue was to occur. To date, the study with the Hells Canyon Complex licensee has not been conducted, nor has consultation with FERC been concluded. NMFS has not issued a final biological opinion on Reclamation's 1998 biological assessment on the availability of acquiring additional upper Snake River water for listed juvenile and adult migrants.
- Biological opinion calls for consultation of the federal agencies to secure an additional 3.5 maf of Canadian storage through flood control reallocations and summer drafting of Arrow Reservoir for average and below average runoff years. The Opinion states that if the Corps and Bonneville fail to make "significant progress" on obtaining these volumes, then consultation will take place. This consultation has not occurred. Additionally, NMFS has not consulted with Reclamation to secure 0.5-1 maf of storage from the Columbia Basin Irrigation Project as recommended by CRITFC for the 1998 Supplemental Opinion for listed steelhead.
- For average and above average flow years CRITFC recommends operating Libby and Hungry Horse to integrated rule curves and if possible, stabilizing Lake Roosevelt to elevation 1283 during August and particularly September. In order to assure these criteria for Lake Roosevelt elevation, at least 500 kaf of water intended for Banks Lake should remain in Lake Roosevelt over the long term.
- For below average flow years irrigation sources provide 83% of Priest Rapids historical average flows, and 75% of Snake River historical average flows. This percentages were derived from the differences in percentage between the historical average flows and below historical average flows and is from the sliding scale concept for the normative river hydrographs.
- The Bureau of Reclamation shall secure additional amounts of water to enhance flows and reservoir storage requirements including an additional 0.5 maf over the current 0.427 maf in average and above average flow years from the upper Snake where irrigation currently appropriates about 7 maf from the Snake River. In below average flow years Reclamation shall secure 75 % of the 0.5 or 0.375 maf over the 0.427 maf.
- The Bureau of Reclamation shall secure additional amounts of water to enhance flows and reservoir storage requirements including an additional 0.25 maf from the Banks Lake and/or the Columbia Basin Irrigation Project which current appropriates 2.7 maf from the Columbia River.

In above average and average flow years maintain Lake Roosevelt at elevation of at least 1283 during August and do not fill Lake Roosevelt above elevation 1283 during September, but pass all inflows through the storage reservoirs to the Lower Columbia. In below average flow years maintain Lake Roosevelt at elevation 1281 during August and September and Banks Lake and/or the Columbia Basin Irrigation Project provides 83% of the 0.25 maf or 0.21 maf.

- Bonneville shall purchase an additional 1.0 maf from Canadian storage.
- In average to above average water years the Bureau of Reclamation and the Corps of Engineers shall operate Libby and Hungry Horse to integrated rule curves, stabilize Dworshak to elevation 1600 by August 1, drafting Dworshak to no lower than elevation 1540 by September 30 and stabilize Lake Roosevelt to elevation 1283 during August and September. In below average water years Reclamation and the Corps shall operate Libby and Hungry Horse and Dworshak to no lower than 1995 Biological Opinion elevations. The Corps shall seek concurrence with the Nez Perce Tribe on management of Dworshak water for anadromous fish.
- The Corps shall provide 200 kaf flood control flexibility for operation of the Brownlee Reservoir. FERC shall require Idaho Power Company to use the Upper Snake water to keep the Brownlee pool near elevation 2074 and pass all additional flow. Brownlee should remain near full pool, until storage is needed to augment fish flows in most years around July 5. FERC shall require Idaho Power to manage storage for anadromous fish migrations at the discretion of the tribes, states and federal fishery managers. FERC shall require Idaho Power to provide 300 kaf of storage to augment fish flows in average and above average flow years and provide 75% of 300 kaf or 225 kaf in below average flow years.
- Dworshak Reservoir management. The federal operators shall follow the 2000 Nez Perce Tribe and State of Idaho Management Plan. Flexibility is needed in the timing of Dworshak flood control excavations. There should be water for a spring and August peak of 14 kcfs. During spring keep the reservoir near full in order to sustain the 14 kcfs flows. Then the pool should be filled to elevation 1600 by early June. Keep Dworshak full until August 1 unless water quality concerns force earlier excavation. Flows for the first half of September should be 12 kcfs to support adult passage in the Clearwater and flush remaining juveniles. Studies indicate that increased flow with temperature control promotes better spawner distribution, and facilitates adult passage.
- In the longer-term, the Bureau of Reclamation shall secure additional amounts of water to enhance flows and reservoir storage requirements including an additional 1.5 maf over the current 0.427 maf in average and above average flow years from the upper Snake where irrigation currently appropriates about 7 maf from the Snake River. In below average flow years Reclamation shall secure 75 % of the 1.5 or 1.125 maf over the 0.427 maf.

Snake River and John Day dams drawdown strategies/actions

- Implement Seasonal Drawdowns. By 2001, the Corps shall implement an experimental drawdown of Lower Granite Reservoir to elevation 723 by June 20 to augment the declining Snake hydrograph and to improve critical rearing habitat and passage for subyearling fall chinook. The Corps shall not fill the reservoir until October 31, after adult migrants have passed upstream of the reservoir. Drawdown and maintain John Day and McNary reservoirs to plus or minus 1.5 feet of minimum operating pool from March 20-October 31. Operate the remaining Lower Snake reservoirs at Minimum Operating Pool until November 1.
- Drawing down these reservoirs will improve critical rearing habitat and expedite water particle travel time and passage survival. Operating pools at MOP will reduce water particle travel time, facilitating juvenile and adult passage. Heat transfer analyses indicate that Lower Granite drawdown will make limited cool water releases from Dworshak more effective, and better meet temperature water quality standards. Radio telemetry studies indicate that Lower Snake River adult passage does not appear to be impacted when fishway entrances are at MOP.

- **Modify Snake River Dams to Natural River Conditions:** The Corps shall restore natural river levels, conditions and habitat in the Lower Snake River by removing the earthen embankments at Ice Harbor, Lower Monumental, Little Goose and Lower Granite dams, and mitigate for the economic and other short-term impacts that will occur; draw down Lower Granite reservoir to elevation 723 feet until embankment removal is accomplished. Complete removal by 2006. This action will restore approximately 9,000 acres of spawning habitat for Snake River fall chinook. It will also improve migration survival for juvenile and adult salmon and steelhead and lower water temperatures. This measure is most likely to restore highly depressed runs of Snake River salmon, steelhead, lamprey and other native fish.
- **John Day Drawdown:** The Corps shall drawdown the reservoir behind John Day Dam to Minimum Operating Pool (MOP) immediately, and to spillway crest or natural river level, on a year-round basis, in the near-term. Complete the drawdown by 2008. This action will restore approximately 40 to 80 miles of spawning habitat for Columbia River fall chinook -- a critical core population identified by the ISAB in the *Return to the River*. It will also improve migration survival for juvenile and adult salmon and steelhead and reduce water temperatures.

Power peaking and flow fluctuation strategies/actions

- **Power Peaking and Ramp Flows.** To prevent stranding of juvenile migrants and to maintain riparian community integrity, Dworshak releases should be ramped at a rate of 6 inches per hour as measured at the Clearwater gage below Dworshak Dam. At the Hells Canyon Complex, limit all flow reductions by ramping rates of no more than 2 inches per hour as measured at Lime Point. In the Hanford Reach, and below Bonneville Dam for chum and chinook reduce power peaking from federal and FERC projects to ramp flows at a rate of no more than 10% of daily average flows over a 24 hour period or no more than 2 inches per hour during the early emergence and rearing migrations of fry and parr (March 20-April 20).
- The Biological Opinion does not call for any provisions that restrict daily flow fluctuations. Extreme flow fluctuations that routinely occur in a 24 hour period from power peaking makes it difficult, if not impossible, for adult fishways and juvenile bypass systems to consistently remain in hydraulic criteria. These criteria are essential to meet fish facility performance standards established by the state and federal fisheries agencies and tribes. Studies have shown that adult passage is significantly delayed by power peaking activities.
- Power peaking can impact critical riparian habitat by limiting invertebrate production and diversity and is contrary to the normative river concept. Dramatic flow fluctuations from power peaking can strand juvenile salmon in shallow littoral areas causing direct mortality of many fish. Such impacts have caused fishery managers to invoke ramping rate criteria to limit power peaking activities in tributaries to less than a two inch per hour change to shoreline areas.

Spill

- Spill operations should be implemented at all federal and FERC licensed mainstem hydro projects. Spill has been consistently shown to provide the best route of juvenile and adult passage through mainstem dams.
- The Corps and Mid-Columbia PUDs shall spill to the total dissolved gas waiver level at each mainstem dam for 24 hours a day from March 20-- September 30. These spill operations should achieve an 80% FPE or better (defined as passage through non-powerhouse routes). Limited spill (about 3-5 kcfs per dam) for adult downstream passage should continue until adult salmon and steelhead cease to pass the dams.
- Spill levels can be modified based upon real-time monitoring of physical and biological parameters at the discretion of the tribes and fish and wildlife management agencies.

Passage over blocked areas (Grand Coulee, Chief Joseph, Dworshak, Hells Canyon)

- Improve Passage and Expand Salmon Production over Barriers. The Corps, Reclamation, Bonneville and FERC-licensed hydro operators shall develop juvenile and adult anadromous fish passage capabilities, employing any and all possible biological, engineering/technological, legal, political and societal means, to circumvent the current artificial barriers to anadromous fish migration at Chief Joseph and Grand Coulee dams, Dworshak Dam and the Hells Canyon Complex (Hells Canyon, Oxbow and Brownlee dams).

Mainstem habitat

- Designate the Hanford Reach of the Columbia River under the federal Wild and Scenic Rivers Act, and re-establish normative river conditions there

Associated with its recommended strategies, especially its dam breaching and other hydrosystem strategies, the Commission also recommended that the program fund development of a mitigation transition plan to provide an appropriate level of mitigation, compensation, and changes in infrastructure and public support programs for the unavoidable economic and social effects associated with actions to rebuild multi-species fish and wildlife populations in the Columbia River Basin. The Commission concluded that the activities in the 2000 program should include modifying the four Lower Snake River dams and John Day Dam to natural river conditions, expanding streamside buffers to protect riparian habitat, increasing flow augmentation to improve the survival of migrating salmon and steelhead, and mitigating/compensating for the fish and wildlife losses caused by the status quo. To develop a credible, multi-species unified plan for the region it will be important to have confidence that parties in the region can implement these activities. Therefore, regional decision makers will need detailed information about how to mitigate, compensate, and/or provide changes in infrastructure and public support programs for these activities. The transition plan should be a creative and highly credible product that identifies the likely effects and the actions necessary to minimize economic disruption and to facilitate a smooth transition in the areas affected by fish and wildlife rebuilding measures. The Commission then recommended a number of elements of the proposed transition plan.

Finally, the Commission recommended a number of specific hydrosystem measures/actions for funding, in Table 1.C.2.2.

Finding: The Council adopted a number of objectives and strategies consistent with the Commission's recommendation, if more general in most cases, and did not adopt other parts of the recommendation, as explained here. As noted elsewhere in response to the Commission's recommendations, for this reorganization phase of the program revision process, the Council decided on a consistent and fairly general level of detail for the basinwide principles and objectives. It gleaned from the Commission's recommendation objectives and strategies at that level of detail. This is consistent as well with the recommendations from other fish and wildlife agencies (*see above*). The mainstem plan phases of the program amendment process will be the forum for considering specific objectives and measures for mainstem habitat, operations and system modifications. Section III.D.6, VIII.1.

Examples of ways in which the Council adopted provisions consistent with and based on the Commission's recommendation include objectives and core strategies calling for:

- management of the hydrosystem so that patterns of flow more closely approximate the natural hydrographic pattern, in terms of quantity, quality, timing and fluctuations;
- mainstem operations and passage efforts to be directed at re-establishing natural river processes where feasible;
- passage decisions that protect biological diversity by benefiting the range of species, stocks, and life-history types in the river and favor solutions that best fit natural behavior patterns and river

processes, with survival in the natural (unimpounded) river the baseline against which to measure the effectiveness of passage methods, and with implementing procedures specified that are consistent with this recommendation;

- protecting and expanding mainstem spawning and rearing habitat and estuary habitat and reclaiming and increasing connections to floodplains and side channels;
- in general, protecting and enhancing currently productive natural riverine conditions and habitat, explicitly referring to the Hanford reach area, and restoring and connecting such conditions and habitat where they have been degraded;
- an investigation of the current constraints on and objectives of water management, including flood control requirements;
- reduced daily system and water level fluctuations;
- improved turbine technology and efficiencies to improve juvenile survival;
- improvements in overall effectiveness of adult fish passage;
- improvements in water quality, including water temperature problems;
- further planning in conjunction with the tribes and others of reconfiguration and operational alternatives that could provide sustained benefits for fish and wildlife on a broad scale;
- protection, mitigation and enhancement of resident fish populations negatively affected by construction and operation of dams, including impacts from water releases from storage projects
- water management and operating conditions that stabilize upper storage reservoirs by utilizing integrated rule curves and other biological rule curves, as illustrated by the explicit continuation in the interim the IRCs established for Hungry Horse and Libby dams; and
- actions to reintroduce anadromous fish into the blocked areas, where feasible.

See Sections III.A.2, III.C.2 and Appendix D, III.D.3, III.D.6.

The Council considered nearly all of the Commission's recommendation to be specific elaborations on these basic principles, specific measures and objectives. This includes recommendations for reservoir drawdowns, dam removal, spill levels, power peaking limits, flow targets and flows, targets for miles of increased spawning habitat, specific reservoir rule curves for appropriate flood control and to protect resident fish, a specific hydrosystem performance objective of 2-6% smolt-to-adult ratio, and so forth. The Council neither adopted nor rejected these recommendations. Specific objectives and measures for the mainstem may be recommended for adoption as part of the mainstem plan.

The Council differed with the Commission's recommendation in a few aspects. The Council did not call for the cessation of barging and trucking of juvenile fish. Other fish and wildlife managers accepted transportation under certain conditions and limitations. *See, e.g.*, the recommendations from the National Marine Fisheries Service (draft and final 2000 biological opinions include reliance on transportation under certain conditions) and from the Oregon Department of Fish and Wildlife (calling for a reduction in transportation and a spread-the-risk strategy between transportation and in-river migration, as well as improvements in transport facilities, but not an elimination of transportation). Consistent with these recommendations, the program accepts juvenile fish transportation as a transitional strategy, calls for a spread-the-risk policy in any event, and calls for increasing in-river migration transportation as "research demonstrates that salmon survival would be improved." The Council finds that the Commission's recommendation is in conflict with recommendations from other fish and wildlife managers, and the Council resolved the conflict in favor of the other recommendations after giving due weight to expertise of all the fish and wildlife agencies and tribes; that what the Council adopted does complement the existing activities of the fish and wildlife agencies in the region more closely than the Commission's recommendation; and that what the Commission recommended is less effective than what the Council adopted in protecting, mitigating and enhancing fish and wildlife currently affected by the hydrosystem, Northwest Power Act §4(h)(6)(A), (7)(B), (7)(C).

The Commission also recommended that the hydrosystem be operated not only to maximize both in-river juvenile anadromous fish survival and adult anadromous fish survival and spawning capacity, but also to protect, mitigate and enhance resident fish in the reservoirs and maintain, to the maximum extent practicable, the water levels and rule curve in Lake Roosevelt and in Libby, Dworshak and Hungry Horse reservoirs for this purpose. Based on other recommendations, especially from upper river fish and wildlife agencies and tribes, the Council viewed these goals as potentially in conflict and therefore to be balanced. The Council also is responsible for assuring an adequate, efficient, economical and reliable power supply as well as protecting, mitigating and enhancing fish and wildlife. The Council thus adopted strategies especially for water management that are more qualified than that recommended by the Commission, such as: “Assure that flow and spill operations are optimized to produce the greatest biological benefits with the least adverse effects on resident fish while assuring an adequate, efficient, economical, and reliable power supply.” Section III.D.6. To the extent there is a significant difference here between what the Council adopted and the Commission’s recommendation (and it is not entirely clear there is such a difference), the Council finds that what it adopted is more effective in assuring the region an adequate, efficient, economical and reliable power supply than what the Commission recommended, Northwest Power Act §4(h)(5); more in harmony with the potentially conflicting recommendations, comments and activities of all the fish and wildlife managers, §4(h)(6)(A), (7)(B), and thus more effective in protecting, mitigating and enhancing all of the fish and wildlife currently affected by the hydrosystem than what the Commission recommended, §4(h)(7)(C).

Finally, the Council did not adopt the recommended mitigation transition plan. The Council’s authority to include provisions for economic assistance, transition and mitigation is presumably limited. Any mitigation and transition provisions need to be tightly linked to specific actions that the program calls for, in order to assist in their implementation. The Commission’s recommendation for a mitigation transition plan is predicated on a close link to a decision to, among other things, modify the four Lower Snake River dams and John Day Dam to natural river conditions. Because the Council did not adopt recommendations to breach dams, the Council did not consider the proposed plan for mitigating the effects of that action. The Council welcomes the Commission’s recommendations on transition and implementation as the Council considers specific actions in future phases of the program revision process.

Source: Montana Fish, Wildlife and Parks
Recommendation No. 31

Recommendation: Montana recommended the following for hydrosystem operations:

- Implement Integrated Rule Curves (IRCs) at all storage projects to reduce negative biological impacts. Implement (IRCs) at Hungry Horse and Libby reservoirs as called for in existing program to reduce negative biological impacts. To date, operational strategies to recover fish species in one part of the basin have inadvertently caused negative impacts on sensitive species elsewhere in the basin, inconsistent with the intent of the Endangered Species Act and the Northwest Power Planning Act. Operation of the federal dams on the Columbia River must be designed to benefit all listed stocks in the Columbia watershed.
- Develop IRCs for projects that do not presently have integrated operational rules.
- Implement the “tiered flow” approach for Kootenai River white sturgeon below Libby Dam.

Finding: The Council adopted this recommendation in part. The Council adopted a vision and objectives designed to improve conditions for all fish and wildlife affected by the hydrosystem, whether listed or not, and implementing strategies calling for, among other things, systemwide water management, including use of water from storage reservoirs, to balance the needs of resident fish in those reservoirs

with the needs of migrating anadromous fish so that actions taken to advance one species do not unnecessarily come at the expense of other species. Section III.D.6, *see also* Section III.A.2 (ninth planning assumption). The Council also adopted a number of implementation, coordination and reporting strategies designed, in part, to ensure that the operating agencies balance systemwide water management among different species and life stages. Section III.D.6. Finally, the Council specified that in the interim, until the Council considers and adopts specific measures in a mainstem plan for the revised program, *see* Sections III.D.6 and VIII.1, the operating conditions to meet the needs of these other species are those adopted by the Council in Section 10 of the 1994-95 program amendments. These include the Integrated Rule Curves at Hungry Horse and Libby dams and the flow regime for Kootenai River white sturgeon.

The Council did not reject the parts of this recommendation that it did not adopt. The Council did not specifically re-consider or re-adopt the IRCs at the Montana projects, call for IRCs at other projects or adopt a “tiered flow” regime for the sturgeon below Libby Dam. Nothing the Council adopted is necessarily inconsistent with these recommendations, but specific objectives and measures will be the subject of the subsequent program amendment process to add a mainstem plan to the program. Sections III.D.6, VIII.1.

Source: Colville Confederated Tribes
Recommendation No. 33

Recommendation: The Colville Tribes recommended that hydrosystem management be consistent with management and guidelines to protect, mitigate and enhance anadromous fish, resident fish and wildlife, both in re-regulating and storage reservoirs. Specific storage-reservoir management guidelines include the following to address entrainment and forage production in Lake Roosevelt:

<u>Period</u>	<u>Elevation</u>	<u>Retention</u>
January	upper flood control rule curve	minimum of 35 days
February	upper flood control rule curve	minimum of 35 days
March-April	upper flood control rule curve	minimum of 35 days
May	1265	minimum of 35 days
June-July	increase from 1265 to 1290	minimum of 45-60 days
August	minimum elevation- 1280	minimum of 45 days
September-Dec.	1285-1290	minimum of 45-60 days, or maximum historically achievable for each month

Finding: The Council adopted this recommendation in part. The Council adopted a vision and objectives designed to improve conditions for all fish and wildlife affected by the hydrosystem. This includes hydrosystem management strategies to establish conditions in the river and in the reservoirs that protect, mitigate and enhance anadromous and resident fish and wildlife, including systemwide water management that balances the needs of resident fish in those reservoirs with the needs of anadromous fish, and the needs of migrating fish with those of spawning and rearing fish. Section III.D.6, *see also* Section III.A.2 (ninth planning assumption). The Council also adopted a number of implementation, coordination and reporting strategies designed, in part, to ensure that the operating agencies balance systemwide water management among different species and life stages. Section III.D.6. Finally, the Council specified that in the interim, until the Council considers and adopts specific measures in a mainstem plan for the revised program, *see* Sections III.D.6 and VIII.1, the operating conditions to meet the needs of these other species are those adopted by the Council in Section 10 of the 1994-95 program

amendments. These include the specific reservoir elevation and retention time targets for Lake Roosevelt recommended at that time by the tribes in the upper Columbia. The elevations and retention times recommended here by the Colville Tribes are a modification of those provisions.

The Council did not reject the parts of this recommendation that it did not adopt. The Council did not specifically re-consider or re-adopt the same or revised Lake Roosevelt target elevations or retention times. Nothing the Council adopted is necessarily inconsistent with this recommendation, but specific objectives and measures will be the subject of the subsequent program amendment process to add a mainstem plan to the program. Sections III.D.6, VIII.1.

Source: Spokane Tribe
Recommendation No. 28

Recommendation: The Spokane Tribe recommended retaining for now all the Lake Roosevelt biological objectives in Section 10.8B of the current program, which include a set of specified elevations and retention times for Lake Roosevelt operations that differ from the elevations and retention times in the Colville Tribes' recommendation above.

The Council should maintain the program's policy and role of seeking to balance the impacts of the hydrosystem so that flow augmentation and other measures to benefit fish runs do not devastate the resident fish populations in the storage reservoirs. Retain Sections 2.2.E.5, 2.2.E.6, and 2.2.E.7 of the 1995 program, concerning reservoir operations through the development of biological rule curves, implementation of operational mitigation actions, and assessment of biological trade-offs between resident fish and wildlife affected by upriver reservoir releases and anadromous fish affected by flow augmentation.

Re-establish anadromous passage at artificial barriers. Undertake a feasibility study for anadromous reintroductions above Chief Joseph Dam, Grand Coulee Dam, and projects upstream from Grand Coulee Dam on the Columbia River and tributaries. Examine the factors that need to be addressed to successfully reintroduce anadromous stocks above Chief Joseph Dam, Grand Coulee Dam, and projects upstream from Grand Coulee Dam on the Columbia River and tributaries. Based on the results of this study, further recommendations will create an implementation plan and schedule.

Finding: The Council adopted this recommendation in large part. Concerning the Spokane Tribe's recommendations to retain the Lake Roosevelt operating conditions, these have been retained pending the consideration and adoption of mainstem measures for the revised program, as discussed above in response to the recommendations of Montana and the Colville Tribes. As for the recommendation to assess the feasibility of re-establishing anadromous fish passage above Chief Joseph and Grand Coulee dams, the Council adopted a general objective to pursue re-introduction of anadromous fish into blocked areas where feasible. See Sections III.A.2 (tenth planning assumption), III.C.2.a.2.

Source: Shoshone-Paiute Tribes
Recommendation No. 23

Recommendation: The Shoshone-Paiute Tribes recommended investigating the feasibility of anadromous fish passage in the blocked areas. Work with Bonneville Power Administration, Idaho Power Corporation, Corps of Engineers, and the Bureau of Reclamation to take a realistic look at

anadromous fish passage over Hells Canyon Complex, CJ Strike Dam, and other barriers in the Snake River basin. In doing this, over 30% of the original anadromous fish spawning areas would be opened back up.

Finding: The Council adopted this recommendation in a general objective to pursue re-introduction of anadromous fish into blocked areas where feasible. *See* Sections III.A.2 (tenth planning assumption), III.C.2.a.2.

Source: U.S. Geological Survey and Confederated Tribes of the Colville Reservation
Recommendation No. 22

Recommendation: The Geological Survey and Colville Tribes noted that development of Grand Coulee and reservoir management practices at Grand Coulee have led to toxic sediment problems above and below the dam, and recommended that the program assess the influence of flow management practices on water quality and whether the concentrations and chemical forms of the metals in the sediments and transported from sediments can influence the restoration success of salmonids.

Finding: The Council adopted general objectives and strategies concerning improving water quality conditions for fish, *see, e.g.*, Section III.C.2.b and Appendix D, which have been discussed in detail at other places in the findings. Objectives and strategies to address specific concerns about toxic sediments and water management at Grand Coulee are a subject for subsequent phases in the program revision process, in the development of the mainstem plan and in the development of provincial objectives and subbasin plans in the Inter-Mountain province.

Source: Bonneville Power Administration
Recommendation No. 37

Recommendation: Bonneville recommended that if the goal of mainstem passage is avoidance of jeopardy and recovery of listed species, then FCRPS managers and operators should be free to select strategies that best (1) ensure the immediate survival and long term recovery of listed species, and (2) ensure the long term healthy populations of native fish and wildlife. Such strategies may not mimic natural situations and processes that emigrating salmonids encountered in their evolutionary history.

Bonneville also recommended that water and hydrosystem management should be based on specific performance standards.

Finding: The goal of the program under the Power Act is to protect and improve the conditions for all fish and wildlife affected by the hydrosystem, not just to avoid jeopardy and allow for recovery of listed species.

The Council adopted hydrosystem strategies that emphasize that actions to improve passage through the system should protect biological diversity by benefiting the range of species, stocks and life-history types in the river, and should favor solutions that best fit natural behavior patterns and river processes, while maximizing fish survival through the projects. Section III.D.6. But the recommendation misunderstands the Council's intent and understanding with regard to favoring natural behavior patterns and river processes. The Council agrees that the central point of the program is to ensure the survival and

the long-term health of the fish populations affected by the hydrosystem -- all the affected fish populations, not just the listed species. These goals are reflected in the vision and objectives for the program. The principles regarding protecting biological diversity and following natural behavior patterns and river processes are means for achieving the vision. The principles first emerged from the Council's review, with ISAB assistance, of the Corps of Engineers' juvenile fish mitigation program. The ISAB concluded that the passage methods that yielded the highest survival tend to be those that best fit natural behavior patterns and river processes. The ISAB did not analyze juvenile transportation in that review, but other reviews and reports from the ISAB and others on transportation indicate that the same general principles apply. The point remains to "favor" these patterns -- to focus on and not ignore these core biological principles, at the peril of making poorly informed decisions -- when considering what actions to take to improve passage. But consistent with this recommendation, if in any particular instance the analysis indicates that the passage method allowing for the highest survival is other than the method that most mimics natural situations, there is nothing in the hydrosystem strategies to prevent the selection of that method.

The program emphasizes in general that the purpose of the strategies at the basin level is to allow maximum management flexibility on how to achieve a set of biological and policy objectives. The Council plans to coordinate with FCRPS managers and others in the development of its mainstem coordination plan, addressing both short-term and long-term strategies. Biological objectives and performance standards will be part of the development and adoption of that plan.

Source: Public Power Council
Recommendation No. 52

Recommendation: The Public Power Council noted that the federal agencies have been giving serious consideration to breaching dams and/or providing increased flow augmentation and spill, which appears to fly in the face of NMFS' own scientific analyses, especially the work being conducted by the Northwest Fisheries Science Center on survival data and opportunities to increase survival. To call for breaching or increased flow and spill would be to call for massive economic dislocation in the name of the ESA. The public deserves a clear and consistent explanation about what is being done and why.

The NMFS' White Papers on flow and survival and passage show there is little value from increasing flows in the spring for Snake River spring/summer chinook. Spending more money for increased flow augmentation in the Snake is an outdated approach that views the hydrosystem as having, only two dimensions -- dam passage and flow -- and ignores the White Papers and NMFS' Cumulative Risk Initiative analysis.

Major changes affecting passage survival have already been made and there are signs that we have reached the point of diminishing returns in flow, spill and passage improvements. The greatest biological benefits from the water available from Brownlee and Dworshak may be associated with temperature controls in the late summer and flows to help juvenile fall chinook migrate to Lower Granite to be transported. The existing flow requirements should be revisited to ensure we are using the available resources to their maximum value. It is quite possible there would be a larger net benefit if flow augmentation were reduced, allowing increased budget levels for hatchery and harvest reform or top-priority habitat programs.

Finding: The Council did not adopt or reject the Public Power Council's recommendations regarding flows, passage and related matters. The Council did not adopt a specific substantive strategy on flow augmentation, although it did call for an annual report on the benefits provided by flow

augmentation. Instead, the Council adopted a set of general principles relating to water management, emphasizing managing the hydrosystem toward reestablishing natural river processes where feasible, with patterns of flow that more closely approximate the natural hydrographic pattern than at present. Changes in water management should be based on fish and wildlife benefits, and operators need to assure that flow and spill operations are optimized to produce the greatest biological benefits with the least adverse effects, while at the same time assuring the region an adequate, efficient, economical and reliable power supply. *Id.*; *see also* Sections III.A.2 (fifth, sixth, seventh and ninth planning assumptions), III.C.2.b and Appendix D (third objective). Consistent with this recommendation, the Council emphasized the continued use of cool water releases to benefit adult migration. But by these strategies the Council neither adopted nor rejected recommendations to continue the use of flow augmentation for juvenile salmon migration. Specific recommendations for continuing, increasing, reducing or curtailing flow augmentation will be an appropriate subject for the mainstem plan phase of the program amendment process, to be evaluated consistent with the general objectives and strategies already adopted. Section III.D.6, VIII.1.

On passage, the Council adopted a set of principles and strategies to guide decisions on passage, emphasizing providing conditions that protect biological diversity by benefiting the range of species and life-history types in the river, and favoring solutions that best fit natural behavior patterns and river processes. The Council provided further guidance on both juvenile and adult passage consistent with these basic principles, and both the recommendations and scientific reports indicate that passage improvements can be still be pursued in the river. But whether and what specific passage measures and investments should be part of the program consistent with the basinwide objectives and strategies will be a subject of the mainstem plan amendment process. This includes consideration of recommendations for breaching dams. As major an event as dam removal would be, it is still a specific implementation measure, and specific implementation objectives and measures for the hydrosystem were not the subject of this phase of the amendment process, but will be considered as part of the mainstem plan.

However, for the purpose of planning for this fish and wildlife program, the Council assumed that, in the near term, the breaching of the four federal dams on the lower Snake River will not occur. Section III.A.2 (sixth planning assumption). This is not a statement of the Council's position on the issue, but instead a statement of the Council's informed conclusion about what others are likely to do during the period in which this version of the fish and wildlife program is being implemented. The Council further recognized that the Council is obliged under law to review its fish and wildlife program at least every five years. "If within that five-year period, the status of the lower Snake River dams or any other major component of the Federal Columbia River Power System has changed, the Council can take that into account as part of the review process." *Id.* The hydrosystem strategies call for the Council, working with federal agencies in the region, the tribes and the state fish and wildlife agencies, to "facilitate a long-term planning study to include consideration of reconfiguration and operational alternatives that could provide benefits for fish and wildlife on a broad scale. The study should also assess the economic and hydropower impacts of all reconfiguration and operational alternatives." Section III.D.6.

Source: Public Utility District No. 1 of Douglas County
Recommendation No. 17

Recommendation: The Douglas County PUD recommended that federal reservoir storage be managed with greater flexibility concerning the proper flood control elevations, in order to be able to optimize flows and reduce flow fluctuations in the Columbia River. During years when the winter snowpack is below normal and target flows are not expected to be met, there should be greater flexibility in managing the federal storage system to prevent spill and to reduce river fluctuations. Bonneville

should be allowed flexibility to manage generation in reaching a flood control point, rather than a straight line draft from one flood control point to another. In doing so, Bonneville should not be considered in violation of its responsibilities if these operations result in Grand Coulee operating below an established flood control point. A more balanced and common sense management approach for federal storage is also expected to complement functional coordination of federal and non-federal projects. A fully coordinated system can further reduce flow fluctuations and provide for stable reservoir levels at run-of-river hydroelectric projects. This translates into reduced impacts to shoreline erosion, protection of archeological and cultural resources, and protection of wildlife and submergent aquatic vegetation. Reduced flow fluctuations are also beneficial to emergent fry by reducing stranding and entrapment opportunities, particularly in the Hanford reach.

Finding: The Council did not adopt provisions as specific as this recommendation. But consistent with the approach the Council took in this reorganization phase of the program revision process, the Council adopted a number of more general objectives and hydrosystem strategies quite consistent with the more specific approach to flood control and storage called for here. These objectives and strategies include calling for flow operations to be optimized to produce the greatest benefits with the least adverse effects while ensuring an adequate, efficient, economical and reliable power supply; protection and expansion of mainstem spawning and rearing habitat; reduced daily flow fluctuations and stabilized reservoir levels; protection for the currently productive habitats, including explicitly the Hanford reach; and “long-term planning regarding the current constraints on and objectives of water management, including current flood control requirements.” Sections III.A.2, III.C.2.b and Appendix D, III.D.6. More specific consideration of flood control operations can be a subject of the consideration and adoption of a mainstem plan. Section III.D.6, VIII.1.

Source: Public Utility District No. 1 of Chelan County
Recommendation No. 4

Recommendation: The Chelan County PUD recommended that the concept that “actions to improve juvenile and adult fish passage should favor solutions that best fit natural behavior patterns and river processes” should be qualified with a phrase like “to the extent possible.” The hydrosystem prevents completely natural behavior patterns and river processes.

With regard to the concept that “spill should be the baseline against which to measure the effectiveness of other passage methods,” the survival of fish is a better baseline for policy decision making at the basin level. Spill is a single method that can be employed at hydro projects to “protect, mitigate and enhance fish.” The effectiveness of spill in increasing survival varies by the project. For example, spill is a very good means of increasing survival at Rock Island, but a very poor means of increasing survival at Rocky Reach due to fish behavior and the orientation of the powerhouse. The choice of methods to increase survival should be left to specific projects at the subbasin level, consistent with the proposed use of performance standards in the draft “Columbia Plateau Province” distributed by the Council for review on April 11, 2000.

It is not realistic to manage each hydroelectric project by the standard that “passage standards must ultimately be related to increases in adults back to the spawning grounds, not just the survival of juveniles (or adults) through the federal Columbia River hydropower system.” Even if it is important that all decisions in the basin to be coordinated to increase the effectiveness of returning adults to their spawning grounds, all that a specific hydroelectric project can do is minimize the unavoidable mortality associated with the project measured by the survival of juveniles and adults through each project. An

adult may not reach the spawning ground, or may reach them and still not spawn for reasons completely unrelated to a specific project.

Habitat conservation agreements under development establish a “No Net Impact” standard for the survival of salmon and steelhead through the Wells, Rocky Reach and Rock Island hydroelectric projects. The No Net Impact standard includes 91% Project Survival, which means that 91% of the salmon and steelhead, juvenile and adult combined, are to survive the effects of each project. 91% Project Survival includes an independent standard of 95% Juvenile Dam Passage Survival, which means that 95% of the juvenile salmon and steelhead over 95% of each species migration survive migration through each project’s forebay, dam and tailrace.

Finding: The Council adopted provisions that are consistent with the underlying substance of this recommendation, even when it adopted phrases of concern to the PUD. The program includes as a general strategy of providing conditions and passage methods in the hydrosystem that protect biological diversity by benefiting a wide range of species and life-history types and which favor solutions that best fit natural behavior patterns and river processes. But as the Council explained in the finding in response to similar concerns expressed by Bonneville, the Council agrees that the central point of the program is to ensure the survival and the long-term health of the fish populations affected by the hydrosystem. The principles regarding protecting biological diversity and following natural behavior patterns and river processes are a means for achieving this objective. The ISAB concluded that the passage methods that yielded the highest survival tend to be those that best fit natural behavior patterns and river processes; the point remains to “favor” these patterns -- to focus on and not ignore these core biological principles, at the peril of making poorly informed decisions -- when considering what actions to take to improve passage. But consistent with this recommendation, if in any particular instance the analysis indicates that the passage method allowing for the highest survival is not the method that most mimics natural situations, there is nothing in the hydrosystem strategies to prevent the selection of that method. The Council explicitly recognized in the general strategy on transportation, for example, that “because the existence of the dams and reservoirs creates conditions that are not natural, the Council, while seeking to improve inriver conditions, recognizes that there are survival benefits from transportation of migrating juvenile salmon.” Section III.D.6.

Thus the program, consistent with the recommendation, recognizes that the choice of the best passage methods at any particular project are project-specific decisions left for consideration in the mainstem plan phase of the program amendment process and in the various planning and implementation processes affecting the projects. The program adopted the concept of survival in the natural river, not spill, as the best baseline against which to measure the effectiveness of passage methods.

Project-specific standards and measures for the mid-Columbia projects should be submitted as recommendations for consideration in the mainstem plan amendment process.

Source: Idaho Water Users
Recommendation No. 18

Recommendation: The Idaho Waters Users recommended a set of water management and passage strategies and policies. A finding follows each one:

Water management/flow augmentation

- Flow augmentation from the Upper Snake River should not be a component of the amended fish and wildlife program. Upper Snake River flow augmentation entails high cost with little or no

biological benefit and even potential biological harm, and would violate a standard that requires cost-effective biological benefit. The Council should recognize Upper Snake River flow augmentation for what it is -- attempted mitigation of passage problems created by the FCRPS. It is the FCRPS facilities that have altered the flow regime in the lower Snake and Columbia Rivers; Upper Snake River activities have not significantly altered the inflow into the FCRPS at Lower Granite Reservoir.

Finding: As noted above, the Council did not adopt a specific substantive strategy on flow augmentation, although it did call for an annual report on the benefits provided by flow augmentation. Instead, the Council adopted a set of general principles relating to water management, emphasizing managing the hydrosystem toward reestablishing natural river processes where feasible, with patterns of water flow that more closely approximate the natural hydrographic pattern than at present. Changes in water management should be based on fish and wildlife benefits, and operators need to ensure that flow and spill operations are optimized to produce the greatest biological benefits with the least adverse effects and while assuring the region an adequate, efficient, economical and reliable power supply. *Id.*; *see also* Sections III.A.2 (fifth, sixth, seventh and ninth planning assumptions), III.C.2.b and Appendix D (third objective). By these strategies the Council neither adopted nor rejected recommendations to continue the use of flow augmentation for juvenile salmon migration. Specific recommendations for continuing, increasing, reducing or curtailing flow augmentation will be an appropriate subject for the mainstem plan phase of the program amendment process, to be evaluated consistent with the general objectives and strategies already adopted. Section III.D.6, VIII.1.

- Water management must be consistent with the goals and objectives described in the Vision, Specific Planning Assumptions, Biological Objectives/Ecosystem Characteristics, and Strategies. The goals and objectives must reflect a balance of economics and ecology in a manner consistent with the physical, legal and political realities. Balance and consistency with reality can be achieved by applying standards of cost effectiveness and biological effectiveness to management options. Flow augmentation should only be included where a cost-effective, significant biological benefit is evident.

Finding: The Council adopted provisions consistent with this recommendation, which is essentially a statement of the overarching organizing principle for the revised program. The principles apply to all strategies and measures, not just flow augmentation.

- Flow concepts need to be placed in context with historical patterns of flow and viable management options that benefit listed species. Rather than focusing on a natural hydrographic pattern in terms of quantity, quality and fluctuation, the amended program should concentrate on management of human activities (e.g., harvest) that have a demonstrated benefit to listed species while realizing the practical limits of the system, balanced with resident species, and human impacts.

Finding: The recommendations of fish and wildlife agencies and tribes and others and the best available scientific reports of the last decade on salmon recovery support the objectives and strategies adopted by the Council of managing the hydrosystem so that patterns of flow more closely approximate the natural hydrographic patterns and re-establishing natural river processes where feasible. That does include, however, realizing the practical limits of the system and balancing system operations to meet the needs of resident as well as anadromous fish, as included in the program consistent with the recommendation. It does not mean ignoring the other areas of human impact, although managing harvest activities is at best peripherally related to protecting, mitigating and enhancing fish and wildlife affected by the hydrosystem, including related spawning grounds and habitat. The Council finds that this recommendation would be less effective than what the Council adopted in the protection, mitigation and

enhancement of anadromous fish, resident fish and wildlife, Northwest Power Act §4(h)(7)(C), and that the recommendation does not complement the activities and recommendations of the region's fish and wildlife agencies and tribes, §4(h)(6)(A), (7), (7)(B).

- Systemwide water management, including flow augmentation from storage reservoirs, should balance the needs of anadromous species with those of resident fish species in upstream storage reservoirs. Resident species, including listed species, were not adequately considered in development of the current program, especially with respect to the call for 1.427 million acre-feet (maf) from the upper Snake River.

Finding: The Council adopted this recommendation. The Council does not agree that resident species were not adequately considered in the previous program.

Passage

- The concept that “spill should be the baseline against which to measure the effectiveness of other passage methods” should not be included in the draft program. Spill is a problematic benchmark due to dissolved gas issues, direct mortality from spill, lack of a way to measure success, and potentially reduced transport effectiveness.

Finding: While the Council does not agree with the concerns raised about spill as a benchmark, still, consistent with this and other recommendations, the Council provided that survival in the natural river, not spill, should be the baseline against which to measure the effectiveness of passage methods.

- Passage solutions should be designed to: 1) protect biodiversity; 2) be cost-effective; and 3) significantly benefit listed species. Strawman focuses too heavily on trying to “favor passage solutions that best fit natural behavior patterns and river processes.” The goal of passage solutions should be to maximize the survival of emigrating salmonids, not to simply pursue the most “natural” approach. For example, transportation improvements should be considered, fairly and fully, as a passage solution even though they may be antithetical to the “normative river” concept. Transportation is much more cost-effective than the alternative approaches of flow augmentation or dam removal. While the principle of “favor[ing] passage solutions that best fit natural behavior patterns and river processes” sounds good, it is unrealistic given the existing hydrosystem configuration.

Finding: The Council does not disagree with, and adopted provisions consistent with, the three principles emphasized by the Water Users. But as explained in the findings above in response to the recommendations from Bonneville and the Chelan County PUD, the Council also adopted the principle of favoring passage solutions that best fit natural behavior patterns and river processes, and believes that this principle is consistent with the other principles as a general rule. Yet the program left room for consideration in any specific instance of what is the appropriate passage method or methods, including transportation in certain circumstances. The Council finds that this recommendation would be less effective than what the Council adopted in the protection, mitigation and enhancement of anadromous fish, resident fish and wildlife, Northwest Power Act §4(h)(7)(C), and that it does not complement the activities and recommendations of the region's fish and wildlife agencies and tribes, §4(h)(6)(A), (7), (7)(B).

Source: Northwest Irrigation Utilities, Columbia-Snake River Irrigators Association, Eastern Oregon Irrigators Association
Recommendation No. 25

Recommendation: These entities recommended that the centerpiece for the new program should be a “New Water Management Alternative for the Columbia River Basin.” The two major components of the proposed New Water Management Alternative are a restructured flow augmentation program for the mainstem Snake and Columbia River system; and the development of a broad set of water management projects within the tributaries and watersheds, along with a discussion of the scientific foundation for this alternative.

Restructure the Existing Flow Targets/Augmentation Program:

The Council and federal water resource agencies shall develop a new hydro regulation for the Columbia Basin system, to review new project operations under a restructuring of the existing flow targets and augmentation program. This review shall be completed by the summer of 2001, or as soon as possible, for implementation during the fall of 2001 and thereafter.

The new hydro regulation review shall focus on a restructured flow augmentation program that better reflects an optimization of the existing water resources. The hydro regulation shall deal with power, flood control, recreation, and fish protection operations.

For fish protection operations, the hydro regulation shall focus on pre-determined volumes (or blocks) of water dedicated for flow augmentation, rather than specific flow targets. The existing flow target approach has not been implemented according to sound scientific and technical principles, and it has created an overly complex operational structure. Water dedicated to flow augmentation will be based on maximum volume allocations, with implementation initiated during the 2001-2002 water-year period or as soon as possible. The water volumes available for flow augmentation will be based on the following specifications:

All Water-Year Conditions, Snake-Columbia River System

- The existing flow augmentation program for the spring period (primarily May-June) is eliminated for both the Snake and Columbia River systems.
- Any use of flow augmentation during the spring period will be for limited, experimental purposes (small volumes of water), with annual implementation approval required by the Council.

Low Water-Year Conditions, Snake River System

- For the summer period (July-August), water managers will provide for 0.0-0.5 maf from the Brownlee Project and Upper Basin region (combined), consistent with state law and obtained from willing sellers or lessors. This action will be reviewed and approved annually by the Council in order to consider fully changing hydro system conditions and/or constraints.
- For the summer period, water managers will provide for 0.2-0.9 maf from Dworshak to be used for fall chinook migration and/or adult temperature control. This action will be reviewed and approved annually by the Council in order to consider fully changing hydro system conditions and/or constraints.

Low Water-Year Conditions, Columbia River System

- For the summer period (July-August), water managers will provide for continued experimentation of 0-3.0 maf, as reviewed and approved by the Council on an annual basis.

Average Water-Year Conditions (or above), Snake River System

- For the summer period (July-August), water managers will provide for 0.0-0.5 maf from the Brownlee Project and Upper Basin region (combined), consistent with state law and obtained from willing sellers or lessors. This action will be reviewed and approved annually by the Council in order to consider fully changing hydro system conditions and/or constraints.
- For the summer period, water managers will provide for 0.2-0.9 maf from Dworshak to be used for fall chinook migration and/or adult temperature control. This action will be reviewed and approved annually by the Council in order to consider fully changing hydro system conditions and/or constraints.

Average Water-Year Conditions (or above) for the Columbia River System

- For the summer period (July-August), water managers will provide for continued experimentation of 0.0-3.0 maf, as reviewed and approved by the Council on an annual basis.

Restructuring of the flow augmentation program will have the greatest deviation from past programs by eliminating the current spring flow augmentation regime. The limited benefits, if any, gained from the spring flow augmentation program could be off-set by a fall smolt transport regime, particularly during low water-year conditions. The new flow regime is expected to work in conjunction with the Council's revised mainstem fish passage program, taking into account smolt transportation measures, project spill regimes, and other juvenile fish passage measures at the mainstem hydro projects.

During the summer period, the restructured program will limit flow augmentation to a level not to exceed operations that occurred in the summer of 1994 (drought conditions). This regime will take into account both biological and economic demands on the river system.

Water Resource Projects within the Tributaries and Watersheds: Prioritizing and Targeting Water Management Projects

Rather than mainstem flow augmentation, the focus for water management will be on upper river and tributary fish enhancement projects. Resource managers need to change water management operations away from mainstem flow augmentation actions to improving habitat-water management conditions within selected tributaries and watersheds. Greater fish benefits may be obtained within tributaries, using less volumes of water. This factor has been generally ignored within the present flow augmentation program. The end-effect of the existing flow targets/augmentation program is the misallocation of water; water is being used "speculatively," at best, with no demonstration of beneficial use--either biological or economic. Water management should be optimized based on measures of biological-environmental benefit and cost-effectiveness.

Finding: The Council neither adopted nor rejected this recommendation, deferring recommendations for specific objectives and measures for hydrosystem operations to the mainstem plan phase of the program amendment process. As noted above, the Council did not adopt a specific substantive strategy on flow augmentation, but (consistent with the substantive concerns of this recommendation) the Council did call for an annual report on the benefits provided by flow augmentation. Instead, the Council adopted a set of general principles relating to water management, emphasizing managing the hydrosystem toward reestablishing natural river processes where feasible, with patterns of water flow that more closely approximate the natural hydrographic pattern than at present. Changes in water management should be based on fish and wildlife benefits, and operators need to ensure that flow and spill operations are optimized to produce the greatest biological benefits with the least adverse effects and while assuring the region an adequate, efficient, economical and reliable power supply. Consistent with this Id.; *see also* Sections III.A.2 (fifth, sixth, seventh and ninth planning assumptions), III.C.2.b and Appendix D (third objective). By these strategies the Council neither adopted nor rejected recommendations to continue the use of flow augmentation for juvenile salmon migration. Specific

recommendations for water management and for continuing, increasing, reducing or curtailing flow augmentation, such as the New Water Management Alternative, will be an appropriate subject for the mainstem plan phase of the program amendment process, to be evaluated consistent with the general objectives and strategies already adopted. Section III.D.6, VIII.1.

The Council responded to the recommendation about tributary resource projects in the findings on the habitat strategies.

Source: Inland Ports and Navigation Group
Recommendation No. 49

Recommendation: The Inland Ports and Navigation Group recommended against any programs or processes that included continued debate or study into dam breaching of the Snake River dams or the John Day Dam. The science today does not have a high enough certainty that breaching dams actually will restore listed species to risk the certain economic upheaval in the region that certainly will flow from breaching the four Snake River dams, or from lowering or breaching the John Day Dam.

The group opposed any actions by the Council that impair navigation. IPNG members said they have navigation rights protected by the United States Constitution, by specific acts of Congress and by numerous court cases. The Columbia/Snake River inland waterway system was developed by Congressional action with navigation as its centerpiece, pursuant to its powers granted under the Commerce Clause of the United States Constitution. All navigable waters of the United States are subject to a federal navigational servitude, which is superior to rights possessed by the States, Indian nations, or private parties. The Clean Water Act recognizes a special role for navigation, specifically stating that the “Act shall not be construed as . . . affecting or impairing the authority of the Secretary of the Army to maintain navigation.” These rights mean that administrative steps recommended or undertaken by the Council, NMFS, the Corps of Engineers, or other members of the Federal Caucus, must not conflict with these navigation rights.

We support continuing improvements at the dam facilities that improve fish passage, and more research into other promising alternatives in this area. Steps have been taken by the Corps to improve turbine safety, and thus improving juvenile passage rates. Although measured improvements have been made in this area, we support further steps to improve fish passage survival rates. IPNG supports Council programs that help improve fish passage at the dams, and research into promising future improvements. We urge your review of results of water temperature analysis that challenge claims made by some critics of the Snake Dams regarding the impact on water temperature “caused” by the dams.

We endorse Council program options and alternatives under review that include greater use of transportation of juvenile fish. IPNG encourages Council review and use of data showing smolt survival has risen in recent years, as facilities/equipment/process improvements have led to higher survival rates. NMFS has stated that survival rates now equal that of the period before the Snake Dams were built.

IPNG reminds the Council that many critics of the Snake Dams have a broader natural river agenda, and all parties should be candid about it. IPNG requests that the Council view with great skepticism any comments from supporters of dam breaching that try to isolate these four Snake River dams from later attempts to breach or draw down McNary, John Day, The Dalles, or even Bonneville Dam. Thus, we urge the Council to avoid compartmentalizing any continued examination of the Snake River Dams (which we oppose) as limited to those four dams. The Council also should encourage more complete review by government entities of some economic issues. For example, critics of dams and

water transportation minimize or ignore environmental damage that would occur if the John Day pool were drawn down to natural river level. IPNG supports more examination into energy loss and replacement issues, because reliance on conservation, as useful as it is, will not be sufficient to meet the region's growing energy needs. Federal agencies should study the degraded air quality from greater pollution resulting from gas turbine energy plants needed to make up for energy production lost if water level at John Dam is lowered to natural river level. If the Council does not remove a John Day drawdown from consideration, then IPNG urges the Council to pay close attention to the unintended consequences on fish and wildlife from lowering the John Day pool.

IPNG believes the Corps also understates the degree of air quality and other environmental damage caused by curtailing navigation above John Day Dam. We urge the Council to support research that examines the environmental degradation and greater wear and tear on infrastructure that would occur if river transportation were removed as a source of cargo movement through the Gorge and replaced by increased truck and rail transportation. Alternative transportation options review (rail or truck) omits sufficient discussion of the impact of the seasonal nature of cargo shipment downriver, and the resulting adverse impacts of surges in demand on inadequate rail or truck transport as replacement for barge transport.

Reliance by the Corps of a national economic model underestimates the severe regional impact and substitutes real adverse economic impacts with some ethereal and abstract theoretical national model. Such a national model somehow can equate new jobs in Chicago or New Orleans as an acceptable shift in the national economy, regardless of the impact of job losses in the region or locality. We strongly urge the Council to reject further projects and programs in which reliance on the national economic model (NED) is used to measure economic impacts in the region.

Finally, the group supported tough action without delay to eradicate or reduce to manageable levels the devastating predation at and near John Day and McNary Dams and throughout Lake Umatilla. IPNG believes that stronger measures should be taken to control northern pikeminnow, walleye, smallmouth bass and channel catfish predation at or near mainstem Columbia and Snake River dams.

Finding: As noted above, the Council did not adopt or reject recommendations to breach dams or to take dam breaching off the table, deferring recommendations for specific objectives and measures for hydrosystem operations and configuration to the mainstem plan phase of the program amendment process. Sections III.D.6, VIII.1. Dam breaching is an implementation measure that can be a subject of the next set of recommendations for a mainstem plan, to be evaluated consistent with the objectives and strategies already adopted by the Council and with the best available science. However, for the purpose of planning for this fish and wildlife program, the Council assumed that, in the near term, the breaching of the four federal dams on the lower Snake River will not occur. Section III.A.2 (sixth planning assumption). The Council recognizes that dam breaching would be a decision ultimately in the hands of Congress, the only entity that has plenary power under the Commerce Clause of the U.S. Constitution to set the terms for navigation on the river.

Consistent with this recommendation, the program calls for continuing improvements at the dam facilities that improve fish passage, and more research into other promising alternatives in this area.

Source:

Columbia River Alliance

Recommendation No.

39

Recommendation: The Columbia River Alliance recommended as follows:

- Re-evaluate the extent to which the hydrosystem, as presently configured and operated, has an adverse impact on salmon and steelhead stocks in the Columbia River Basin.
- Consider calls for a “normative” river and dam breaching as inconsistent with past mitigation efforts, and may represent an unlawful attempt to impose new and substantial remedial obligations on federal dam operators.
- Abandon all spring flow augmentation and real-time management of flow, because it serves no purpose, wastes fishery management resources, and creates conflicts with the needs of resident fish.
- Experiment with late summer/fall flow augmentation in low water years, because there is a good chance of benefits to returning fall adults, and possible benefits to juvenile salmon at very low flow levels.
- Maximize smolt transportation by eliminating spill at all collection facilities, because all available scientific evidence demonstrates substantial benefits. Improve transportation by experimenting with release strategies (*i.e.*, further downstream) to avoid substantial estuarine mortality
- Adjust spill on a project-by-project basis to optimize passage survival at non-collector projects (*e.g.*, reduce spill at The Dalles and Ice Harbor), taking care to balance potential positive effects on juveniles against negative effects on adults.
- Reactivate sluiceway passage at available projects, as available studies demonstrate substantial passage benefits, and expand surface collector efforts
- Ensure that “fish-friendly” turbines are available in time for renovation of mainstem facilities.
- Use Bonneville Fish Cost Contingency Fund monies for operational experiments with flow augmentation in low flow years. Increase program beyond experimental level only after data demonstrate survival improvements caused by flow augmentation.

Finding: The Council adopted provisions consistent with parts of this recommendation, including strategies calling for continued testing and development of surface bypass systems and other passage improvements that optimize passage survival (sluiceway passage is not mentioned explicitly but can be a method that fits the general principles in the program), turbine modifications to improve juvenile survival, the use of cool water releases in certain circumstances to facilitate adult migration, the need to consider and adjust spill and other passage methods on a project-by-project basis, and so forth. Section III.D.6. The Council did not adopt other provisions consistent with this recommendation, such as a call for a “normative” river or for substantial system configuration changes at this time.

The Council did not adopt other parts of this recommendation. For the Council’s findings and explanations regarding flow augmentation, dam breaching and transportation, *see* findings above and below. Many of the recommendations here, such as for use of flow augmentation experiments and innovative financing, experimental release strategies to improve transportation, reducing spill at Ice Harbor and The Dalles, and specific reactivation of sluiceway passage at certain projects, can be subjects in the mainstem plan amendment process to follow. To the extent the provisions that were adopted are a rejection of recommended points, the Council finds that the recommendation would be less effective than the provisions the Council did adopt in the protection, mitigation and enhancement of anadromous fish, resident fish and wildlife, Northwest Power Act §4(h)(7)(C), and that the recommendation does not complement the activities and recommendations of the region’s other fish and wildlife agencies and tribes as well as what the Council adopted, §4(h)(6)(A), (7), (7)(B).

Source: Northwest Resource Information Center, Inc.
Recommendation No. 51

Recommendation: The Northwest Resource Information Center, Inc., recommended:

- The Council's program should direct the U.S. Army Corps of Engineers to act on its own findings and breach the four lower Snake River dams. The Council should provide a schedule consistent with prudent biological and engineering considerations, i.e., not more than five years total.
- The Council should provide that the Bonneville Power Administration absorb the cost to replace any energy forgone as the result of breaching that the free enterprise, deregulated market is unable to provide, i.e., zero.
- Continuing to rely on transportation of juveniles violates the letter and intent of the Power Act and, among other things, biological common sense.

Finding: The Council did not adopt or reject the recommendation concerning breaching the four lower Snake dams. The Council will be conducting a subsequent phase of the program revision process in which it considers and adopts recommendations for specific objectives and measures in the mainstem, in a mainstem plan. Sections III.D.6, VIII.1. This includes recommendations to breach specific mainstem dams. However, for the purpose of planning for this fish and wildlife program, the Council assumed that, in the near term, the breaching of the four federal dams on the lower Snake River will not occur. Section III.A.2 (sixth planning assumption).

The Council rejected the recommendation to discontinue reliance on transportation. The recommendations of the fish and wildlife agencies continue to include some reliance on transportation. *See, e.g.*, the recommendations of the National Marine Fisheries Service (draft and final 2000 biological opinions include reliance on transportation) and Oregon Department of Fish and Wildlife (calling for a reduction in transportation and a spread-the-risk strategy, as well as improvements in transport facilities, but not an elimination of transportation). The Council did put a priority, however, on improving habitat and natural river processes and functions where possible, and thus continuing to improve inriver migration conditions. Accordingly, the Council adopted a general strategy concerning transportation that (1) accepts juvenile fish transportation as a transitional strategy, authorized only because under current system conditions there are times when there are survival benefits from transportation of migrating juvenile salmon; (2) gives priority to the funding of research that more accurately measures the effect of improved inriver migration compared to transportation, (3) recommends increasing inriver migration when research demonstrates that salmon survival would be improved as a result of such migration, and (4) endorses the strategy of "spread the risk" which, depending on water and environmental conditions, divides migrating juvenile salmon and steelhead between inriver passage and transportation. It is not clear why continued reliance on transportation under these circumstances would be seen as violating the Northwest Power Act; certainly the Council does not believe that it does. The Council finds that the recommendation does not complement the activities and recommendations of the region's fish and wildlife agencies and tribes as well as what the Council adopted, Northwest Power Act §4(h)(6)(A), (7), (7)(B), and would be less effective than what the Council adopted in the protection, mitigation and enhancement of anadromous fish, resident fish and wildlife, §4(h)(7)(C).

Source: Sierra Club -- Columbia Basin Field Office
Recommendation No. 9, 27
Source: Save Our Wild Salmon
Recommendation No. 29

Recommendation: The two organizations recommended:

- Partially remove four Lower Snake dams.
- Permanently drawdown John Day reservoir to spillway crest.
- End juvenile fish transportation by truck, and phase out of fish barging.
- Improve dam and reservoir passage at the four Lower Columbia and the five mid-Columbia mainstem projects, including controlled spill for juvenile fish passage.
- Provide strategic investments in energy conservation and renewables, transportation infrastructure, and irrigation pumping facilities in order to mitigate economic impacts and strengthen the regional and local economy.
- Provide flow augmentation in the Columbia and Snake Rivers. (Save Our Wild Salmon recommended “add[ing] significant” flow augmentation.)
- In light of the recent Environmental Protection Agency comments regarding water quality problems associated with dams on the Columbia and Snake Rivers, the Council should pay special attention to ensure that its actions and recommendations correct current water quality violations. (This bullet is from the Save Our Wild Salmon recommendation. The Sierra Club recommended that the program should require compliance with the Clean Water Act by the Corps of Engineers at its four Lower Snake River dams.)

Finding: The Council did not adopt or reject the recommendation concerning removal of the four lower Snake dams. The Council will be conducting a subsequent phase of the program revision process in which it considers and adopts recommendations for specific objectives and measures in the mainstem, in a mainstem plan. Sections III.D.6, VIII.1. This includes recommendations to breach specific mainstem dams. However, for the purpose of planning for this fish and wildlife program, the Council assumed that, in the near term, the breaching of the four federal dams on the lower Snake River will not occur. Section III.A.2 (sixth planning assumption).

The mainstem plan amendment process will also be the place to consider conservation and other investments necessary to preserve an adequate, efficient, economical and reliable power supply for the region consistent with also operating the hydrosystem to protect, mitigate and enhance fish and wildlife. Also, the hydrosystem strategies call for the Council, working with federal agencies in the region, the tribes and the state fish and wildlife agencies, to “facilitate a long-term planning study to include consideration of reconfiguration and operational alternatives that could provide benefits for fish and wildlife on a broad scale. The study should also assess the economic and hydropower impacts of all reconfiguration and operational alternatives.” Section III.D.6.

With regard to the recommendation to phase out juvenile transportation, and to end transportation by truck, the finding above explains the Council’s general strategy with regard to transportation, and the reasons for that strategy. Consistent with these recommendations, the Council called for improvements in juvenile and adult passage at the mainstem projects. Spill is not specifically mentioned, but is implicit in the reference to the Council adopting a general strategy based on the reports by the Independent Scientific Advisory Board and the Council of the current fish mitigation program in the hydrosystem. Those reports identified spill, together with gas abatement measures, as likely to remain the most effective means of in-river juvenile passage for the near future, providing the highest survival largely because it is the most consistent with natural behavior patterns and river processes.

The Council did not adopt a specific substantive strategy on flow augmentation, although it did call for an annual report on the benefits provided by flow augmentation. Instead, the Council adopted a set of general principles relating to water management, emphasizing managing the hydrosystem toward reestablishing natural river processes where feasible, with patterns of water flow that more closely approximate the natural hydrographic pattern than at present. Changes in water management should be based on fish and wildlife benefits, and operators need to ensure that flow and spill operations are optimized to produce the greatest biological benefits with the least adverse effects, while assuring the region an adequate, efficient, economical and reliable power supply. *Id.*; *see also* Sections III.A.2 (fifth, sixth, seventh and ninth planning assumptions), III.C.2.b and Appendix D (third objective). By these strategies the Council neither adopted nor rejected recommendations to continue the use of flow augmentation for juvenile salmon migration. Specific recommendations for continuing, increasing, reducing or curtailing flow augmentation will be an appropriate subject for the mainstem plan phase of the program amendment process, to be evaluated consistent with the general objectives and strategies already adopted. Section III.D.6, VIII.1. The flow measures in the existing program remain part of the program until the Council adopts the mainstem plan.

Finally, as has been explained in findings on other sections, the Council did not adopt specific water quality objectives or strategies. Consistent with the overall approach in this phase, the Council adopted a program vision and policy direction stating that the goal of rebuilding fish and wildlife populations depends on protecting, mitigating and restoring the habitat conditions and ecological functions that support these populations. Section III.A.1, A.2. Water quality is one of the key habitat attributes. The Council also adopted, provisionally, basinwide biological objectives for the protection and improvement in aquatic and riparian habitat and ecological functions, which include water quality; stating that habitat restoration may be framed in the context of measured trends in water quality; calling for water quality conditions that tend more toward the water quality that would exist under a natural hydrographic pattern; and so forth. Also, the Council assumes compliance with the law, including compliance by the Corps of Engineers with the Clean Water Act, and so this is not included in the program. The real questions are what specifically the Clean Water Act requires of the Corps and whether there is a role for the program in assisting the Corps in meeting those requirements. It will be during the mainstem planning and subbasin planning phases of the program revision process that specific objectives and actions relating to water quality and water quality standards should be addressed.

Source: Bill Williams
Recommendation No. 11

Recommendation: Mr. Williams recommended restoring a free flowing river to the extent possible by breaching the four lower Snake River dams.

Finding: The Council did not adopt or reject this recommendation concerning removal of the four lower Snake dams. The Council will be conducting a subsequent phase of the program revision process in which it considers and adopts recommendations for specific objectives and measures in the mainstem, in a mainstem plan. Sections III.D.6, VIII.1. This includes recommendations to breach specific mainstem dams. However, for the purpose of planning for this fish and wildlife program, the Council assumed that, in the near term, the breaching of the four federal dams on the lower Snake River will not occur. Section III.A.2 (sixth planning assumption).

Source: Jim Likes
Recommendation No. 2

Recommendation: Mr. Likes recommended breaching the lower Snake River dams.

Finding: The Council did not adopt or reject this recommendation. The Council will be conducting a subsequent phase of the program revision process in which it considers and adopts recommendations for specific objectives and measures in the mainstem, in a mainstem plan. Sections III.D.6, VIII.1.

3(c)(iv)(A) Hydrosystem operations -- implementation procedures and structure

Source: National Marine Fisheries Service
Recommendation No. 54

Recommendation: With regard to hydro operations, National Marine Fisheries Service noted that it continue to use the “Regional Forum” structure established under the 1995-2000 FCRPS Biological Opinion to develop and review an annual water management plan, address real time operations, and to plan for and prioritize system fish passage needs, including operation and maintenance of those fish facilities. The Regional Forum is open to and encourages participation by the states, tribes, federal agencies, and others, including the Council.

For planning purposes, NMFS recommended that the Council designate the mainstem lower Snake and Columbia Rivers as a separate province or subbasin for planning purposes, because of the continuity of mainstem “habitat” created by the dams and reservoirs, and because of its dissimilarity to the tributaries which feed into the mainstem. Dividing parts of the Snake and Columbia mainstem into different ecological provinces may be an inappropriate subdivision of the mainstem system. The designation recommended here not only would recognize how mainstem issues are already addressed, but would also provide a “planning home” for integration of the myriad of activities currently underway as well as new ones to be undertaken relative to the NMFS 2000 Biological Opinion.

NMFS further explained that a specialized science dealing with the particular problems encountered by migratory salmonids in this environment has emerged. This science deals with fish passage facilities at and between the hydroelectric facilities, seasonal and real time operation of those facilities, operational changes affecting flow augmentation and spill, and research, monitoring, and evaluation activities associated with gaining better understanding of how to improve survival through the system of dams and reservoirs. Also, numerous committees have been established to deal with fish passage, hydropower operations, research, monitoring, and evaluation relative to the mainstem and the particular challenges it presents. These include the Technical Management Team, the System Configuration Team, and Water Quality Team of the NMFS’ Regional Forum, the Fish Passage Advisory Committee, the Fish Passage Operation and Maintenance Committee, and the Fish Facilities Design Review Work Group, and others. There is little overlap in personnel among these teams and committees and the subregional teams dealing with tributary issues associated with maintenance of high quality spawning and rearing habitat. The biological and engineering expertise needed to be effective in planning, implementing, monitoring, and evaluating actions in the mainstem is quite different from that needed to do similar work in tributaries.

Finding: Consistent with this recommendation, the Council plans to address hydrosystem operations and passage issues through the development and adoption into the program of a mainstem plan, covering the mainstem Columbia and Snake rivers. The Council also recognized the existence of the implementation groups and structure established by the federal agencies under the biological opinion for annual and in-season planning and management of hydrosystem operations. The Council recommended joint sponsorship with the Council of this system for better participation by all affected entities and greater public awareness and involvement.

Source:

Columbia River Inter-Tribal Fish Commission

Recommendation No.:

40

Recommendation: The Commission recommended that federal and non-federal hydroproject operators should remain cognizant that they have responsibilities to protect salmon and other anadromous fish other than under the Endangered Species Act. The Fish and Wildlife Coordination Act, the Northwest Power Act, the *US-Canada Pacific Salmon Treaty* and treaties with the CRITFC tribes all require that the operators pursue and address tribal recommendations for river operations. Neither the biological opinions of the federal fisheries agencies nor the NMFS implementation structure and process can substitute for these responsibilities. The tribes ask the federal operators to carefully consider implementing the tribal recommended strategies to fully protect tribal treaty resources. Implementation of these strategies is vital to the treaty tribes as part of the federal government's trust responsibility to shift the inequitable conservation burden away from tribal harvest and to assist tribal members in beginning to increase their standard of living and health to levels enjoyed by non-tribal peoples.

The Commission then recommended the following hydrosystem implementation process, including the establishment through the program of the Fish Operations Executive Committee:

- Initiate an annual policy and technical process to address flow, dissolved gas, temperature regimes, and other water quality parameters and fish passage issues such as project prioritization under the Corps' Columbia River Fish Juvenile Fish Mitigation Program and hydro expenditures under the program funded by Bonneville. The Fish Operations Executive Committee will manage this process and reconcile these issues to protect and restore anadromous and resident fish. The Committee will be appointed by policy officials from the Council, Basin tribes and the Departments of Commerce and Interior and made up of senior management representatives of the state fishery agencies, tribes and federal fishery agencies. All Committee decisions will be based upon a unanimous consensus. In the case of dispute or non-consensus, the default position is implementation of program standards, principles and measures. Dispute resolution shall be implemented in a process under the continuing jurisdiction of the federal district court as has been model for *U.S. v. Oregon* and the Mid-Columbia Proceedings. There will be a technical committee established of representatives from the Basin tribes, and federal and state fishery agencies. The technical committee will provide necessary information for the Committee. The policy and technical committees will meet at least once a month and may meet more often to resolve key issues.
- The Committee should produce a detailed, annual implementation plan for carrying out its work. The Committee shall produce a system configuration plan for the Corps to submit for WRDA funding by November 1 prior to the year the CRJFMP plan would be considered by Congress. The Committee should produce the operating plan by March 10 of each year and will need to begin in the preceding year to complete its work. The Corps, Bonneville and Reclamation will supply a set of PNCA non-firm power criteria for the following water year to the Committee for review by July 1 of each year. Upon review and adoption, the Corps, Bonneville and Reclamation shall adopt the consensus recommendations of the Committee for non-firm power needs by August 1 and incorporate the recommendations into the PNCA annual operating plan. In general, the Corps, Bonneville and Reclamation will adopt the standards, principles and measures of the program into the PNCA annual operating plan. The committee should consider matters such as spill, the Corps' Fish Passage Plan, the fishery agencies and tribes' Detailed Fishery Operating Plan annual operating plans for the Non-Treaty Storage Fish and Wildlife Agreement, planning for coordinated system operations, Idaho Power Company's proposed operations under its weak stock plan, water identified by the Snake River Anadromous Fish Water Management Office, spring and fall trade-offs, research and monitoring results and other mainstem passage matters.

- In its meetings, the Committee should identify all water available in a particular year and plan for its use consistent with Council specified reservoir constraints and anadromous fish measures. During low flow conditions when the monthly average flow equivalent of 85,000 cubic feet per second in the Snake River cannot be provided for the full migration period, flows should be distributed as per the normative hydrograph previously described to protect a portion of all known naturally reproducing stocks. The plan will have the flexibility to move flows between May and June, if such shaping is more likely to achieve the intent of this program. If there are conflicting water demands among anadromous species, conflicts should be resolved by the Committee. In resolving conflicts, the Committee should carefully consider the value of retaining cold water in the Dworshak project to help control temperatures for Snake River fall chinook returning adults.
- The Committee will develop a procedure to address fish passage and flow operations throughout the migration season, if necessary.
- Develop accounting procedures for the use of this water.
- Manage water supplies for fish in accordance with the annual implementation plan. To assist the full range of stocks migrating in the Snake and Columbia rivers, every effort must be made to shape water stored for fish flow augmentation to the fullest extent practicable. Any proposed deviations from the implementation plan must be approved by the Fish Operations Executive Committee.
- In developing the annual implementation plan, the Committee shall specifically evaluate tradeoffs between flows needed for anadromous fish and reservoir operations needed to protect resident fish and wildlife in Columbia Basin storage reservoirs that are federally operated, licensed or regulated. All alterations in river operations should consider impacts on resident fish and other species, especially threatened, endangered or native species, and should seek to avoid adverse effects on them.
- The region needs a process to ensure that an adaptive management framework for evaluating hydrosystem operations is developed in an independent, scientifically credible and open manner. This will have to proceed in close cooperation with the FOEC technical committee and federal river operating agencies. The region should work with the existing research process and make sure that it is coordinated with all interested parties. The primary means for coordination should be through the FOEC technical committee coordinating with Independent Scientific Advisory Board. This technical group will work with the National Marine Fisheries Service and other agencies to design an adaptive framework. The role of the Independent Scientific Group will be to ensure that the adaptive framework and operations and system configuration research is scientifically credible and to keep the FOEC policy committee abreast of important developments.
- The Commission retained but somewhat revised the Fish Passage Center, particularly to call for funding separate fish passage managers to represent the state/federal fishery agencies and the tribes.

Finding: The Council did not adopt recommended hydrosystem implementation procedures at this level of detail in this phase of the program revision process. The Council agrees with the Commission on the need for the federal agencies to better recognize that they have responsibilities with regard to fish and wildlife in the basin affected by the hydrosystem beyond the Endangered Species Act, that the implementation structure and procedures need to allow for effective participation by the Council, tribes and states than currently exists in annual and in-season planning. At this stage in the program revision process the Council made these points generally, and called for joint sponsorship of the existing structures and processes and extending the review and considerations of an annual operating plan, with an eye toward broadening both participation and the substantive considerations of the process. The

additional details recommended by the Commission are worthy of further consideration; more specific details on hydrosystem operations can be a subject of the mainstem plan amendment process to follow.

Source: Northwest Irrigation Utilities, Columbia-Snake River Irrigators Association, Eastern Oregon Irrigators Association
Recommendation No. 25

Recommendation: These associations recommended that an important feature of their recommended “New Water Management Alternative for the Columbia River Basin” is an increased role for the Council in hydrosystem operations implementation, including annual review by the Council members for approval for implementation.

Finding: Consistent with this recommendation, the Council called for the operating agencies and the in-season management participants to prepare and review with the Council and the public an annual operating plan. Section III.D.6. The Council also recommended joint sponsorship with federal agencies of the implementation structure for annual and in-season hydrosystem planning and implementation. Id.

3(c)(v) Standards relating to future hydroelectric development/Protected Areas

Source: Oregon Department of Fish and Wildlife
Recommendation No. 26
Source: Montana Fish, Wildlife and Parks
Recommendation No. 31
Source: Shoshone-Bannock Tribes
Recommendation No. 38

Recommendation: The agencies and tribe recommended that the Council retain the standards described in Section 12 of the current program concerning hydroelectric development and the Protected Areas.

Finding: The Council adopted this recommendation. Section III.D.6 and Appendix B.

Source: Sierra Club -- Columbia Basin Field Office
Recommendation No. 27
Source: Save Our Wild Salmon
Recommendation No. 29

Recommendation: The organizations recommended that the Council retain “Protected Areas” rule.

Finding: The Council adopted this recommendation. Section III.D.6 and Appendix B.

3(c)(vi) Wildlife strategies

Source: Oregon Department of Fish and Wildlife
Recommendation No. 26

Recommendation: Oregon recommended a number of objectives and policies regarding wildlife mitigation. Findings follow each recommendation or set of similar recommendations.

Objectives for wildlife mitigation:

- quantify wildlife losses caused by the construction, inundation, and operation of the hydropower projects;
- develop and implement habitat acquisition and enhancement projects to mitigate for identified losses;
- coordinate mitigation activities throughout the basin and with fish mitigation and restoration efforts;
- maintain existing and created habitat values through long-term operations and maintenance funding;
- monitor and evaluate habitat and species responses to mitigation actions using standard criteria.

Finding: The Council adopted biological performance objectives based on this recommendation. Sections III.C.2.a.4.

- Retain the wildlife measures already in the program to achieve and sustain levels of habitat and species to fully mitigate for the direct and indirect wildlife losses that have resulted from the construction, inundation, and operation of the federal and non-federal hydroelectric system in the Columbia River Basin.

Finding: The Council adopted objectives and strategies consistent with the substance of this recommendation, continuing to completion the current wildlife mitigation program and retaining the loss assessments and mitigation priorities on which that mitigation effort has been based. Sections III.C.2.a.4, III.D.7, Appendix C.

- The program should address and mitigate the direct and indirect impacts of the “hydropower facilities” in the broad sense that Congress intended, including all effects traceable to any of the projects’ purposes (i.e., construction and inundation, direct operational, and indirect operational or secondary impacts).

Finding: The Council adopted provisions consistent with this recommendation, continuing the program’s understanding of the need to mitigate for construction and inundation, operational and secondary losses. Sections III.C.2.a.4, III.D.7.

- The hydropower system should protect, mitigate and enhance wildlife to the extent affected by the federal hydrosystem. This obligation is satisfied only when these effects are fully addressed, that is, when mitigation actually offsets the loss caused by a hydropower facility and when the operator provides funding for operation and maintenance adequate to sustain the mitigation in perpetuity. The program should specify that any and all wildlife losses are fully mitigated only when Bonneville provides operations and maintenance funding over the life of the project or in perpetuity. Mitigation projects that seek a different arrangement for long-term operations and maintenance funding other than from Bonneville should be approved by the Council.

Finding: The Council adopted objectives and strategies consistent with the substance of this recommendation, if more general. The wildlife losses caused by the hydrosystem are identified as the basis for the biological performance objectives for wildlife mitigation. The objectives include maintaining the existing and enhanced habitat values. The strategies then state that wildlife mitigation programs must provide protection of the habitat for the life of the project. If an existing wildlife agreement does not already provide for long-term maintenance of the habitat values, then Bonneville and the relevant management entity must develop for Council review and recommendation a “maintenance agreement adequate to sustain the minimum credited habitat values for the life of the project” Sections III.C.2.a.4, III.D.7.

- The Council should continue to adopt the construction and inundation losses as identified in Table 1 of an appendix to the recommendation (Table 11-4 of the existing program) as the unannualized losses of wildlife habitat from the construction and inundation of the federal hydropower system. These losses should be mitigated as described in these recommendations. Priority for implementation of wildlife mitigation should be mitigation of the remaining construction and inundation losses as identified in Table 1 of the appendix to the recommendation (Table 11-4 of the existing program), as adjusted by the assessment of wildlife mitigation implemented to date as specified above, and should emphasize addressing areas of the basin with the highest remaining proportion of unmitigated losses.

Finding: The Council adopted this recommendation. Sections III.D.7, VI.A.4, Appendix C.

- Ensure that wildlife mitigation projects implemented in fulfillment of this program are consistent with the basin-wide habitat implementation priorities described in Table 2 of the appendix to the recommendation (Tables 11-1 to 11-3 of the existing program).

Finding: The Council adopted this recommendation. Section III.D.7 and Appendix C.

- Develop hydroelectric project operational loss assessments and incorporate the operational loss assessments into the program. Define *direct* operational losses as the changes to biological, hydrological, and geomorphic features and resources caused by the operation of the federal hydrosystem including, but not limited to, hydropower, irrigation, slackwater, recreation, navigation, and flood control that result in the loss or alteration of wildlife resources. Operational losses begin the moment a hydroelectric facility becomes operational and occur until the effects of hydropower operation are no longer measurable. Conduct the assessment of direct operational impacts (unannualized) on wildlife habitat using the Habitat Evaluation Procedures (HEP). Conduct an independent audit of the results of the direct operational loss assessments before adopting the estimates into the program. Establish priorities for target species and habitat types for direct operational losses once an assessment of direct operational losses is completed, similar to Table 2 of the appendix to the recommendation (Tables 11-1 to 11-3 of the existing program) for construction and inundation losses. Wildlife mitigation projects implemented to address direct operational losses in fulfillment of the program should be consistent with these basinwide habitat implementation priorities once established and adopted into the program.

Finding: The Council adopted objectives and strategies consistent with the substance of this recommendation, if more general. The Council called for an assessment of direct operational losses, defined direct operational losses in the glossary as the losses caused by the day-to-day fluctuations in flows and reservoir levels resulting from the operation of the hydrosystem, and called for these direct operational losses to be addressed in the subbasin plans. Sections III.C.2.a.4, III.D.7, Appendix A.

- The Council should direct Bonneville to mitigate all construction and inundation losses and direct operational losses on a 3:1 basis, e.g. Bonneville should acquire 3 habitat units or acres for every 1 habitat unit or acre lost. This ratio should be applied to all mitigation accomplished to date and all mitigation to be implemented in the future. Doing so will have the effect of incorporating baseline protection credits (i.e., existence value) and annualization of these losses as defined by the HEP methodology.

Finding: The long-standing dispute regarding the appropriate ratio for crediting land acquisitions for wildlife habitat as mitigation for lost wildlife habitat was one of the most contested issues in this program amendment process. On the one hand, Bonneville maintains that a 1:1 crediting ratio -- that is, crediting each acre of land or habitat unit acquired and protected as exactly equivalent mitigation for each acre of land or habitat unit lost due to dam construction and inundation -- is the technically and legally appropriate standard. Bonneville also contends that past decisions and contracts have already established the 1:1 crediting ratio as an irrevocable part of the wildlife program. On the other hand, the wildlife managers maintain that something greater than a 1:1 crediting ratio is technically and biologically necessary. An appropriate crediting ratio must take into account the fact that lands acquired and protected through the program have pre-existing wildlife habitat values that are, in most cases, not in immediate danger of complete loss. The act of purchasing and protecting property with pre-existing wildlife habitat does not bring the wildlife value of that acquired property from zero to the assessed value by the fact of purchase, which it would have to do to match on a 1:1 basis the habitat units or acres completely lost to construction and inundation. This problem is magnified, the managers have noted, by the fact that the losses have not been "annualized," that is, they are treated as a one-time static loss and not as an accumulation of the losses in each year since inundation. To assume that the wildlife value of property acquired would, except for the protection afforded by the acquisition, one day decline to zero, and thus that it is legitimate to match it in a 1:1 crediting ratio against wildlife losses, is to apply a form of annualization to the mitigation that has not been applied to the losses. Finally, the wildlife managers contend that other wildlife mitigation programs use a crediting ratio of 2:1 or greater for precisely these reasons, and that past actions under this program that authorize the use of a 1:1 crediting ratio have always been understood, by the managers at least, as an interim minimum crediting arrangements pending a final resolution of the issue.

In the draft program, the Council noted that the proper mitigation crediting ratio for the replacement of construction and inundation losses has been an issue that needs to be resolved. The Council had hopes that Bonneville and the wildlife managers, with the assistance of Council staff, could still come to an agreement on crediting that the Council could adopt into the final program: ***"Note: Past fish and wildlife programs have recommended that Bonneville and the fish and wildlife agencies and tribes attempt to reach agreement on the ratio at which replacement habitat units should be credited toward lost habitat units. The Council would prefer that all parties reach consensus on this issue, and therefore provides 45 days from the release of this draft program for all of these parties to meet and reach agreement on what the crediting ratio should be. In the event that the parties are unable to reach agreement, the Council will determine this ratio based on the recommendations and comments received."*** The managers and Bonneville did not come to an agreement as to what the crediting ratio should be.

In making its decision on the appropriate crediting ratio, the Council reviewed the recommendations, the comments on the recommendations and the draft program, and the history of this issue within the program, and has been guided especially by the following points: (1) This issue has been in dispute and in need of a programmatic resolution as long as the program has had a wildlife component. It is time to settle the issue. (2) Bonneville has executed contracts for specific wildlife projects that contain provisions crediting Bonneville on a 1:1 basis for the habitat units or acres acquired. Past programs have provided that the Council would accept such agreements as a step meant to allow

mitigation agreements to move forward while the participants worked to resolve the crediting issue. (3) As a substantive matter, the Council is persuaded that, although reasonable arguments may be made for various crediting ratios, a 1:1 crediting ratio is not the appropriate standard for crediting replacement habitat purchases against wildlife lands lost due to hydrosystem construction and inundation. Using a 1:1 crediting ratio has several analytical flaws. First, it is a given that an inundated acre has zero wildlife value. Crediting preserved acres or habitat units on a 1:1 basis implies that these preserved acres or units would necessarily have gone to zero value as well, absent preservation. This might happen -- land might be paved over as a strip-mall -- but we do not know this at the time of purchase. Instead, acquired and preserved acres have a pre-existing value for wildlife that would continue into the future to some unknown extent and might never decay, even if never purchased. The sheer fact of purchase does not create or change that value. Using a 1:1 ratio ignores this fact. Second, if there are two acres of equal wildlife habitat value and one is inundated and the other protected by acquisition, using a 1:1 ratio could imply instead that the preserved acre must or will double in habitat value in order to achieve equivalent mitigation. There is no support in theory or experience to suggest that simple preservation will somehow result in such a doubling. Finally, it is also a given that the losses have not been annualized, which means that the loss estimates are in the low end of the range of legitimate ways to conceptualize the losses. This adds to the conclusion that mitigation crediting at a 1:1 ratio for these estimated losses will not provide adequate mitigation.

With this background, the Council accepted the recommendation of Oregon and the other wildlife managers not to accept a 1:1 crediting ratio, but modified that recommendation in two ways. First, the Council recognized existing mitigation project agreements, even if such agreements have a crediting ratio of 1:1. The only exception would be for agreements that clearly provide that the crediting ratio in the agreement was to be revisited upon final determination of the appropriate crediting ratio for the program as a whole. Second, the Council determined that a 2:1 crediting ratio, not a 3:1 ratio, would be the most appropriate for the remaining habitat units to be acquired to mitigate for the construction/inundation losses. Section III.D.7. The Council chose the 2:1 ratio as consistent with other mitigation programs in the basin and as an appropriate balance between the contesting views.

For the reasons given here, including the Council's judgment as to what policy with regard to crediting best meets the legal and biological requirements, accommodates part practice, and has the greatest chance of successful implementation, the Council finds that the recommendation would be less effective than what the Council adopted in the protection, mitigation and enhancement of wildlife, Northwest Power Act §4(h)(7)(C).

- Adopt a consistent system for tracking wildlife mitigation implemented to mitigate for construction and inundation and direct operational losses via habitat protection, enhancement, and maintenance. The program should use the HEP methodology, the unannualized construction and inundation losses in Table 1 of the appendix to the recommendation (Table 11-4 of the existing program), the direct operational losses to be assessed and amended into the program, and the mitigation ratio of 3:1 established above as the basis of the wildlife mitigation tracking system. The Council should immediately call for and conduct an assessment of wildlife mitigation of construction and inundation losses to date, including acres and/or habitat units purchased, leased, under conservation easement, or enhanced, subbasin where mitigation was implemented and related hydroproject, operations and maintenance provided, terms of easement or lease agreements (duration), etc. This assessment should be then be adjusted to reflect the 3:1 mitigation ratio called for above to determine actual wildlife mitigation to date, and the remaining construction and inundation losses to be mitigated. The tracking system described above should use this assessment as the initial accounting of wildlife mitigation implemented to date.

Finding: For the continued importance of the construction and inundation loss estimates and for the Council's response to the 3:1 crediting ratio recommendation, *see* the findings above. Although the Council did not adopt a separate statement to this effect, the Habitat Evaluation Procedure (HEP) methodology continues to be the basis for determining the wildlife losses and extent of mitigation, *see, e.g.,* Section III.D.7 (use of HEP methodology in habitat enhancement). The Council did not adopt a distinct strategy concerning tracking and assessment of mitigation to date, but not because it disagrees with the substance. The Council calls for the completion of the current program to mitigate construction and inundation losses. Completion of the program will have to include an assessment of the status of mitigation for the estimated losses. Monitoring of mitigation and the accumulation of this information already takes place, led by Bonneville and using the HEP methodology. To the extent wildlife managers or others have questions about the status of the mitigation program to date or of the methods for monitoring and assessment, the Council can facilitate a review of program implementation pursuant to Section 4(i) of the Power Act.

- Wildlife mitigation assessments should use the Habitat Evaluation Procedure with annualization.

Finding: As noted above, the Habitat Evaluation Procedure (HEP) methodology continues to be the basis for assessing the wildlife losses and extent of mitigation, *see, e.g.,* Section III.D.7 (use of HEP methodology in assessing habitat enhancement). The Council did not adopt the recommendation to use annualization to assess losses or determine the mitigation due for losses. Annualization was not used in the assessment of the construction and inundation losses. (But as explained above, the lack of annualization is one key reason why a mitigation crediting ratio greater than 1:1 is reasonable for this program.) The Council decided that it made sense to maintain a consistent approach to annualization as the program moves to assess the direct operational and secondary losses. Again, however, the lack of annualization should be a factor when determining the extent of mitigation needed to compensate for the estimated losses.

- The program should recognize and formalize the following mitigation and construction and inundation loss allocations:
 1. All construction and inundation losses for Dworshak Dam are fully mitigated; long-term operation and maintenance funding has been provided.
 2. All construction and inundation losses for Libby and Hungry Horse Dams are fully mitigated; long-term operation and maintenance funding has been provided.
 3. Construction and inundation and direct operational losses for the four Lower Columbia projects: Bonneville, The Dalles, John Day and McNary Dams should be allocated and mitigated within their respective subbasins in Washington and Oregon using the ratios established in the Washington Interim Wildlife Agreement.
 4. Construction and inundation and direct operational losses for the four Lower Snake projects: Ice Harbor, Lower Granite, Little Goose and Lower Monumental Dams, should be allocated and mitigated within subbasins in Idaho, Washington and Oregon in the following manner:
 - All mitigation accomplished under the Nez Perce Tribe NE Oregon Project;
 - All mitigation accomplished under the Oregon Ladd Marsh and Wenaha projects;
 - All mitigation accomplished under the Burns-Paiute Tribe Logan Valley and Denny Jones projects.
 - All remaining Lower Snake construction and inundation and direct operational losses not mitigated by the above projects should be equally divided between the states of Washington, Idaho and Oregon to be mitigated in subbasins of the Snake River within those states. Allocation of these losses to mitigation projects should be determined by the Council and the wildlife managers with wildlife mitigation responsibilities in the Snake River Basin. Highest priority should be given to those entities within each state that have not initiated wildlife mitigation projects, e.g. Shoshone-Bannock Tribe and the Shoshone-

Paiute Tribe, and for projects proposed in subbasins that feed directly into the Snake River.

Finding: The Council did not adopt a provision as specific as this recommendation, but again, not because of disagreement with the substantive points. With regard to construction and inundation losses, the Council calls for completion of the current mitigation program. Allocation of units is addressed by the general geographic principle that habitat units must be acquired in the subbasin most relevant to the loss (that is, because the loss was in that subbasin or in a mainstem reach linked to that subbasin in some way), unless agreed otherwise by the fish and wildlife managers and tribes. Completion of the current mitigation program necessarily includes the accounting and allocation of losses and mitigation, as an on-going part of implementation of this program. This assessment work is on-going, led by Bonneville. Wildlife managers or others may seek a review by the Council and the public of the progress of implementation, as part of on-going oversight of program implementation. With regard to direct operational losses, the Council called for assessments to determine what are the operational impacts on wildlife habitat and for subbasin plans to serve as the vehicle to provide mitigation for operational losses. Section III.D.7. That more specific level of program planning will be the place to address the matters recommended here.

- Losses should be mitigated in-place, in-kind. The Habitat Evaluation Procedures Relative Value Index should be used for out-of-kind wildlife mitigation. Exceptions to in-kind/in-place wildlife mitigation should be implemented only upon approval of the Council.

Finding: The Council adopted provisions consistent with this recommendation. Mitigating for construction and inundation losses precisely in place is of course impossible, but the Council called for habitat for mitigation to be acquired in the same area or subbasin as the losses occurred. Operational losses are to be addressed in subbasin plans, tying the mitigation to the area of loss. In-kind mitigation is addressed through the tables describing the losses to be mitigated in terms of the habitat units for the species affected. Section III.D.7 and Appendix C.

- Habitat enhancement credits should be provided to Bonneville when habitat management activities funded by Bonneville lead to a net increase in habitat value when compared to the level identified in the baseline habitat inventory and subsequent habitat inventories. This determination should be made through the periodic monitoring of the project site using the HEP methodology. Bonneville should be credited for habitat enhancement efforts at a ratio of one habitat unit credited for every one net habitat unit gained (1:1).

Finding: The Council adopted this recommendation. Section III.D.7.

- The program should define secondary losses as the impacts to wildlife and wildlife habitat that occur due to the loss of anadromous and resident fish resulting from the development and operation of the federal and non-federal hydropower system. Subbasin plans should address the assessment of secondary losses of wildlife.

Finding: Consistent with this recommendation, the Council adopted provisions recognizing secondary losses and calling for subbasin plans to serve as the vehicle to provide mitigation for secondary losses. The Council did not adopt a specific definition of secondary losses, but agrees that the Council's understanding of the meaning of the term is consistent with the recommended definition. Sections III.C.2.a.4, III.D.7.

- Projects not specifically designed to mitigate for defined wildlife construction and inundation or direct operational losses (e.g., watershed projects, fish habitat projects) should be credited against secondary losses (i.e., indirect operational losses) that are established in subbasin planning. Resident and anadromous fish habitat projects can provide measurable benefits to wildlife habitat. When fish habitat projects are approached from a true watershed or landscape perspective (i.e., consider more than the stream channel), these secondary benefits to wildlife can be even greater. However, watershed and fish projects are not necessarily targeting the specific terrestrial habitat types (e.g., shrub steppe) and wildlife species (e.g., wintering mule deer) impacted by the construction of the hydrosystem, and may not provide a sufficient degree of protection over time (permanence). Therefore, wildlife losses cannot be fully addressed through watershed and fish projects alone. The program should not credit the wildlife benefits resulting from watershed and fish projects against the construction and inundation and direct operational losses ledger established or amended into Table 1 of the appendix to the recommendation (Table 11-4 of the existing program).

Finding: The Council did not adopt this recommendation, but the provisions it did adopt are consistent with much of the underlying substance of this recommendation. Staying true to the Council's approach of a consistent and fairly general level of detail for the basinwide principles and objectives, the Council called generally for the completion of the current mitigation program to address the construction and inundation losses. Those losses are displayed in the program as the lost habitat units that must be replaced with habitat that targets the right types of habitat for those species, and the mitigation must be adequate to sustain the credited habitat values for the life of the project. The Council agrees that a watershed or fish project that does not contain the specific habitat type and units that must be acquired and that does not provide the sufficient degree of protection over time should not be credited to the construction and inundation losses (or to estimates of the operational losses, when developed). The program's strategy is to integrate the wildlife assessments, planning and mitigation actions into multi-species subbasin planning, especially to address the operational and secondary losses, but that does not mean crediting of projects to wildlife mitigation that do not distinctly target the wildlife losses that occurred and do not provide the level of protection called for in the wildlife program. Sections III.C.2.a.4, III.D.7.

- Habitat units gained through the construction, inundation or operation of the basin's hydroelectric facilities have and should be recognized. The creation of new habitats does not replace the functions provided by the habitat types directly impacted by hydropower development. These gains should be credited against the secondary (indirect operational) losses component of the program as established in subbasin planning.

Finding: The Council did not adopt a specific provision on habitat units gained in this manner. The Council adopted provisions recognizing the types of habitat losses that exist and strategies to address those losses. How particular habitat units are protected or enhanced to address these losses, including habitat gained or created as described here, should then be treated on a case-by-case or project-by-project basis consistent with the objectives and strategies adopted. To the extent this is considered a rejection of the recommendation, the Council finds that the recommendation would be less effective than what the Council adopted in the protection, mitigation and enhancement of wildlife, Northwest Power Act §4(h)(7)(C).

- A monitoring and evaluation plan that measures changes in habitat conditions and species response to management actions through time should be developed and implemented.

Finding: The Council adopted an objective consistent with this recommendation. Section III.C.2.a.4.

- The Council should retain Section 11.5A, “Mitigation Considerations in Dam Licensing Decisions” of the current program to ensure that wildlife mitigation by FERC-regulated hydroprojects is consistent and complementary with the wildlife mitigation standards for federal hydroprojects and the non-federal projects contribute fully and proportionately to regional wildlife mitigation goals.

Finding: The Council adopted this recommendation. Appendix C.

- The Council should adopt the “Guidelines for Enhancement, Operation, and Maintenance Activities for Wildlife Mitigation Projects” prepared by the wildlife managers in June 1998. Wildlife enhancement, operations, and maintenance activities should be consistent with and should follow these guidelines.

Finding: The Council did not adopt or reject this specific recommendation. Instead, consistent with the approach it took across the program, the Council adopted a key set of general objectives and principles for the wildlife elements of the program, including enhancement and maintenance agreements. The guidelines described here are one useful source for the detail of how to implement the wildlife program consistent with the objectives and strategies adopted. Sections III.C.2.a.4, III.D.7.

- The Council should adopt a revised Draft Wildlife Plan, as called for in the Council’s current program. The plan should act as a 5-year work plan for the regional wildlife managers. The plan should be revisited every provincial rolling review cycle and should reflect the current basin-wide vision, biological objectives and strategies, as well as outline more specific short-term objectives and strategies for achieving specific wildlife mitigation goals.

Finding: In one sense, the Council adopted this recommendation through the objectives and strategies it adopted into the program. The program itself is the “Wildlife Plan” described here, that is, the repository of the basinwide vision, objectives and strategies, with the possibility of further refinement of the basinwide objectives. Sections III.A, III.C.2 and 2.a.4, III.D.7, VIII.2. But the Council did not adopt that part of the recommendation to include at this time more specific objectives and a five-year work plan for implementing projects. Consistent with the general re-organization of the program as a multi-species, habitat-based approach to off-site mitigation, in which the specific planning and implementation will occur through the subbasins, the Council decided that the specific implementation of wildlife mitigation should occur through the subbasin plans, with wildlife mitigation objectives and projects integrated with fish mitigation objectives and projects. Sections III.D.7, V. The Council finds that the recommendation would be less effective than what the Council adopted in the protection, mitigation and enhancement of wildlife, Northwest Power Act §4(h)(7)(C), and that what the Council adopted is more consistent with the general recommendations for the organization and operation of the program that came from the fish and wildlife agencies and tribes (including Oregon) and others, §4(h)(6)(A), (7), (7)(A).

- All Bonneville funds dedicated to wildlife mitigation, i.e. habitat acquisition, protection, enhancement and maintenance, should be established in a trust or escrow account(s) to be managed by Bonneville, the basin’s wildlife managers and the Council; operations and maintenance funds should be in similar but separate account(s). These accounts can be established as individual trusts or settlement agreements and should be consistent with the program vision, objectives and strategies. Accounts of this type ensures adequate surety, flexibility, efficiency and savings in accomplishing wildlife mitigation via land acquisitions, leases or easements, enhancements and operations and maintenance.

- Trust/settlement agreements and other mitigation programs shall demonstrate consistency with mitigation goals, objectives, and methods.
 - Specifically, a trust fund should be established within one year following adoption of the Council’s new program, for the protection, mitigation, enhancement and operations, maintenance, monitoring and evaluation of all wildlife mitigation projects in Oregon to ensure that wildlife mitigation in the state of Oregon proceeds expeditiously. Annual payments and interest from a trust fund must be sufficient to support:
 1. annual operations and maintenance
 2. monitoring and evaluation of on-going projects
 3. a reasonable rate of implementation of new protection and enhancement projects.
 The trust fund should be established over time and fully vested by 2008 to a level sufficient to support all Bonneville obligations for wildlife mitigation construction, inundation and direct operational impacts in the State of Oregon in perpetuity.

Finding: The Council did not adopt these recommendations, although it did not reject the use of trust funds or accounts as one tool in implementation of wildlife projects. For example, the Council did call for the establishment of a land and water acquisition fund which is generally consistent in a number of respects with the substance of this recommendation. Section VI.A.8. But the Council did not specifically call for the use or establishment of trust agreements and accounts for wildlife mitigation, in Oregon or elsewhere. Instead, as noted above, the Council called for the focus of wildlife mitigation planning and implementation to shift to the subbasin planning process, and the selection of wildlife projects for funding to the rolling provincial review process. It is possible that trust accounts and agreements will be one implementation tool that will arise out of subbasin planning; this program does not preclude this from happening, nor does it presume it will or must happen. The Council finds that the recommendation would be less effective than what the Council adopted in the protection, mitigation and enhancement of wildlife, Northwest Power Act §4(h)(7)(C), and that what the Council adopted is more consistent with the general recommendations for the organization and operation of the program that came from the fish and wildlife agencies and tribes and others, §4(h)(6)(A), (7), (7)(A).

Source: Idaho Department of Fish and Game
Recommendation No. 36

Recommendation: Idaho also provided a lengthy set of wildlife recommendations. A finding follows each:

- Idaho’s wildlife recommendation contained all of the provisions recommended above from Oregon, with the following exceptions: Idaho emphasized that completing the mitigation for the construction and inundation losses should be a “high” priority and should conclude with full (100%) mitigation. Idaho submitted a slightly different version of the mitigate “in-place, in-kind” provision, summarized below. Idaho did not recommend adoption of a revised Wildlife Plan or the establishment of a trust fund for Oregon wildlife projects. And Idaho recommended an additional set of provisions, summarized below:

Finding: The recommendations that overlap with those of Oregon are addressed above.

- Where practical, mitigate losses in-place, in-kind. When a wildlife measure is not in-place, in-kind, the habitat units protected, mitigated or enhanced by that measure will be credited against

mitigation due for one or more appropriate hydroelectric projects with the knowledge and permission of the appropriate subbasin fish and wildlife managers.

Finding: The Council adopted provisions consistent with this recommendation. Mitigating for construction and inundation losses precisely in place is of course impossible, but the Council called for an allocation of habitat units to be accomplished by acquiring habitat for mitigation in the same area or subbasin as the losses occurred, unless otherwise agreed by the wildlife managers in that area. Operational losses are to be addressed in subbasin plans, tying the mitigation to the area of loss. In-kind mitigation is addressed through the tables describing the losses to be mitigated in terms of the habitat units for the species affected. Section III.D.7 and Appendix C.

- Additional efforts to mitigate the loss of wildlife habitat due to construction and operation of private hydroelectric facilities will continue to be a high priority.

Finding: The Council adopted provisions consistent with this recommendation, in this way: The 1995 program included the goal of mitigating wildlife losses caused by construction and operation of the federal *and* non-federal hydroelectric system. Sections 11.1, 11.2C. Section 11.5A then recognized that non-federal projects licensed by the Federal Energy Regulatory Commission must give equal consideration in licensing and relicensing to the protection, mitigation and enhancement of wildlife, with a call to FERC to ensure that its license conditions took into account to the fullest extent practicable the policies established in the program and contributed fully and proportionately to regional wildlife mitigation goals. In the program as revised, the Council noted that development and operation of the river's hydrosystem resulted in wildlife losses and called for full mitigation for those losses. Section III.C.2.a.4. The program makes no distinction in this regard between federal and non-federal projects. And then the Council retained Section 11.5A from the previous program. Appendix C.

- Funding for monitoring and evaluation must occur to determine if the predicted benefits are realized.

Finding: The Council called for monitoring and evaluation of the benefits gained as a general objective of the wildlife program. Sections III.C.2.a.4. III.D.7. The Council agrees that funding recommendations must ensure this happens, but those are decisions for project funding and not program development.

- Habitat units will be the preferred unit of measurement for construction and inundation mitigation accounting unless the region's wildlife managers agree to another method that, in the Council's opinion, adequately takes into account both habitat quantity and quality adequate to mitigate for the identified losses.
- Baseline protection credits in the form of habitat units (HUs) will be granted to Bonneville for protection of wildlife habitat proportional to Bonneville's investment. The determination of baseline protection credits should continue to be made through the application of the Habitat Evaluation Procedures (HEP) methodology.

Finding: The Council adopted provisions consistent with this recommendation, as described in the responses to Oregon's recommendations. Habitat units and the HEP methodology remain central to the Council's wildlife program.

- Support the existing interagency work groups, such as the Albeni Falls Interagency Work Group and the Palisades Interagency Work Group.

- All mitigation activities associated with Albeni Falls Dam should be consistent with the *Albeni Falls Interagency Work Group Operating Guidelines and Guiding Principles for Mitigation Implementation* (1998), and those associated with Palisades, Minidoka, Anderson Ranch, and Black Canyon Dams should be consistent with the existing Memorandum of Agreement between the Idaho and the Shoshone-Bannock Tribes (1996).
- All protection, mitigation and enhancement activities and appropriate crediting for wildlife losses at Albeni Falls Dam will be coordinated, approved, and implemented through the Albeni Falls Interagency Work Group.
- Mitigation efforts for wildlife losses occurring within the blocked areas of the basin will be focused within the respective blocked areas. For example, wildlife losses attributable to Grand Coulee, Chief Joseph, Albeni Falls, Willamette and Upper Snake will occur within the appropriate areas. Any mitigation activities occurring outside of the respective area will require involvement of all co-managers.

Finding: The Council did not adopt or reject wildlife recommendations relating to specific areas. That is for the more specific planning and amendment processes at finer geographic levels. The Council did adopt a general principle that mitigation efforts for wildlife losses should take place in the subbasins and areas where the losses occurred. Section III.D.7.

- Idaho also recommended the following *Foundation for a Habitat-Based Approach* to wildlife:

The human ecology of the Pacific Northwest has been and continues to rely heavily on the Columbia River system. The development of the Columbia River Basin has provided many modern, social benefits such as hydropower, irrigation, and flood control. These benefits, however, also came with many social and biological costs that were largely ignored for decades. A free-flowing river became a series of reservoirs. The historic salmon and steelhead runs became sparse. The timing and intensity of natural water flows were altered. Riparian corridors and adjacent uplands were inundated. Perhaps most important, yet least understood, were the cumulative impacts on both terrestrial and aquatic systems.

Other land use activities also have impacted native wildlife habitat in the Columbia Basin over the last 100-200 years. Since the 1860s, when mining and farming boomed, wetlands in Idaho have decreased 56 percent, from about 879,000 acres to approximately 386,000 acres (Dahl 1980). The Interior Columbia Basin Ecosystem Management Project basin-wide analysis of riparian vegetation noted widespread declines of shrublands in riparian zones (USFS 1996). Cottonwood, aspen, and willow -- typical riparian-associated species -- significantly decreased in the Snake River Headwaters and the Columbia Plateau.

Substantial declines in native grasslands and shrublands, mostly on non-federal lands, also have been documented (USFS 1996). Within the Columbia Basin, many wildlife species have declined because of the changes and loss of native shrublands and grasslands, including Columbian sharp-tailed grouse, sage grouse, loggerhead shrike, pygmy rabbit, white-tailed antelope squirrel, California bighorn sheep, and Washington and Idaho ground squirrels. The current extent of shrub-steppe and grassland protection in Idaho is low (Caicco et al. 1995). Neotropical migrants, whose populations are declining globally, also would benefit from conserving and restoring riparian, old forest, shrub-steppe, grassland, and juniper habitats (USFS 1996).

Although the obvious cost of the hydropower system was the impact on wild salmon and steelhead runs, the cumulative impacts to wildlife also were recognized. As a result of the Northwest Power Act, the Council adopted the fish and wildlife program to address these impacts and to ensure that

wildlife receive equitable treatment in matters concerning the hydropower system. The goal of the program's wildlife strategy is "to achieve and sustain levels of habitat and species productivity as a means of fully mitigating wildlife losses caused by construction and operation of the federal and non-federal hydroelectric system" (Sec. 11.1, 1995 Amendments).

In Idaho, seven federal projects (Albeni Falls, Dworshak, Deadwood, Palisades, Anderson Ranch, Black Canyon, and Minidoka) inundated a total of 62,216 acres of wildlife habitat. Using the standardized Habitat Evaluation Procedure (HEP), a measure of both the quality and quantity of wildlife habitat (USFWS 1980), biologists estimated net losses of habitat units (HU) for a variety of target species. Ongoing wildlife and anadromous fish projects (e.g., Albeni Falls Wildlife Mitigation Project, Southern Idaho Wildlife Mitigation Project, Red River Stream Restoration) are designed to mitigate those losses by protecting and enhancing riparian, wetland, forested, and shrub-steppe habitats on which a wide variety of species depend. As our operating philosophy, we emphasize conservation biology's current ideology: 'Protect the best, restore the rest'. Although acquisitions require large capital outlay, land and easement acquisitions are effective means of protecting habitat in perpetuity.

Finding: The Council did not adopt or reject this recommendation. There is nothing in it with which the Council necessarily disagrees or that is inconsistent with the general introduction and principles the Council adopted. But the recommendation is at a level of specific detail more appropriate to provincial descriptions and objectives and subbasin planning.

Source:	Spokane Tribe
Recommendation No.	28
Source:	Montana Fish, Wildlife and Parks
Recommendation No.	31
Source:	Colville Confederated Tribes
Recommendation No.	33
Source:	Burns-Paiute Tribe
Recommendation No.	34
Source:	Shoshone-Bannock Tribes
Recommendation No.	38
Source:	Umatilla Tribes
Recommendation No.	41
Source:	Coeur d'Alene Tribe
Recommendation No.	42
Source:	Washington Department of Fish and Wildlife
Recommendation No.	43
Source:	Kalispel Tribe
Recommendation No.	48
Source:	Kootenai Tribe
Recommendation No.	50

Recommendation: These state fish and wildlife agencies and tribes recommended a set of wildlife policies that were largely a subset of the longer set of policies recommended by Oregon and Idaho above, with but a few differences. The following recommendations came from all ten entities unless noted otherwise:

- Mitigation efforts for wildlife losses occurring within the blocked areas of the basin will be focused within the respective blocked areas. For example, wildlife losses attributable to Grand Coulee, Chief Joseph, Albeni Falls and Upper Snake will occur within the appropriate areas. Any mitigation activities occurring outside of the respective area will require approval of all relevant wildlife co-managers. (Montana and the Umatilla Tribe did not include this recommendation. Washington added the Willamette to the list of locations where wildlife losses occurred and mitigation should take place.)
- Credit projects not specifically designed to mitigate for defined wildlife construction/inundation losses (e.g., watershed projects, fish habitat projects) against secondary losses. Resident and anadromous fish habitat projects can provide measurable benefits to wildlife habitat. When fish habitat projects are approached from a true watershed or landscape perspective (i.e., consider more than the stream channel), these secondary benefits to wildlife can be even greater. However, watershed and fish projects are not necessarily targeting the specific terrestrial habitat types (e.g., shrub steppe) and wildlife species (e.g., wintering mule deer) impacted by the construction of the hydrosystem, and may not provide the same degree of protection over time (permanence) as required by the CBFWA wildlife criteria. Therefore, wildlife losses cannot be fully addressed through watershed and fish projects alone. It may be inappropriate to credit the wildlife benefits resulting from watershed and fish projects to the construction/inundation losses ledger. These system wide benefits may be better suited to addressing secondary losses. (Montana did not include this recommendation.)
- During annual prioritization activities, increased emphasis will be placed on addressing areas of the basin with the highest remaining proportion of construction and inundation losses. (The Umatilla Tribe did not include this recommendation.)
- Habitat units will be the preferred unit of measurement for construction and inundation mitigation accounting unless the region's wildlife managers agree to another method that, in the Council's opinion, adequately takes into account both habitat quantity and quality adequate to mitigate for the identified losses. (Montana did not include this recommendation.)
- Baseline protection credits in the form of habitat units (HU's) will be granted to Bonneville for each new habitat area protected or secured in perpetuity for mitigation. The determination of baseline protection credits should continue to be made through the application of the Habitat Evaluation Procedures (HEP) methodology. Baseline protection credits will be granted to Bonneville at the rate of one HU credit for every three HU's protected. This ratio is the Wildlife Managers' consensus alternative for baseline protection crediting of wildlife acquisition projects. (Montana did not include this recommendation.)
- The Council's program should address and mitigate the direct and indirect impacts of the "hydropower facilities" in the broad sense that Congress intended, including all effects traceable to any of the projects' purposes (i.e., construction and inundation, operational, and secondary impacts).
- Ensure that wildlife mitigation projects implemented to address construction and inundation losses in fulfillment of this program are consistent with the basin-wide habitat implementation priorities described in Tables 11-1 to 11-3 of the existing program. (Montana and the Umatilla Tribes did not include this recommendation. The Colville Tribes' recommendation ended at the word "priorities" and did not include the reference to the table.)
- Mitigation of the remaining construction and inundation losses identified in Table 11-4 of the existing program is a priority for wildlife implementation in the basin. (Montana and the Umatilla Tribes did not include this recommendation.)
- Habitat enhancement credits will be provided to Bonneville when habitat management activities made possible through Bonneville provided funding lead to a net increase in habitat value when compared to the level identified in the most recent habitat inventory. This determination will be made through the periodic monitoring of the project site via the habitat evaluation technique

referred to as Habitat Evaluation Procedures (HEP). Bonneville will be credited for habitat enhancement efforts at a ratio of one habitat unit (HU) credited for every one net habitat unit (HU) gained (1:1).

- Habitat units gained through the construction, inundation or operation of the basin's hydroelectric facilities should be recognized. The creation of new habitats does not replace the functions provided by the habitat types directly impacted by hydropower development. These gains are best suited for crediting to the secondary loss component of the program. (Washington added that these gains might be credited to “operational” as well as secondary losses.)
- Where practical, mitigate losses in-place, in-kind. When a wildlife measure is not in-place, in-kind, the habitat units protected, mitigated or enhanced by that measure will be credited against mitigation due for one or more appropriate hydroelectric projects with the knowledge and permission of the appropriate subbasin fish and wildlife managers. (The Umatilla Tribe did not include this recommendation.)
- Provide permanent protection or enhancement of wildlife habitat in the most cost-effective manner.
- The hydropower system must protect, mitigate and enhance wildlife to the extent affected by FCRPS. This obligation will be discharged when these effects are fully addressed, i.e., when mitigation actually offsets the loss caused by a hydropower facility, and when the operator provides adequate operation and maintenance funding to sustain the mitigation in perpetuity. Funding for monitoring and evaluation will be used to determine if the predicted benefits were realized.
- Trust/settlement agreements and other mitigation programs shall demonstrate consistency with mitigation goals, objectives, and methods. (Montana did not include this recommendation.)
 - The program should specify that any and all wildlife losses are fully mitigated only when Bonneville provides operations and maintenance funding over the life of the project or in perpetuity. Mitigation projects that seek a different arrangement for long-term operations and maintenance funding other than from Bonneville should be approved by the Council. (Only the Umatilla Tribes provided this recommendation.)
 - Wildlife mitigation assessments should use the Habitat Evaluation Procedures with annualization. (Only the Umatilla Tribes provided this recommendation.)

Finding: These recommendations have been addressed above in the findings in response to the Oregon and Idaho recommendations. Most of the recommendations here are duplicates of provisions in the Oregon and/or Idaho recommendations, and those that are not exact duplicates recommend similar substantive points.

Source: Colville Confederated Tribes
Recommendation No. 33

Recommendation: The Colville Tribes recommended that the highest priority for wildlife mitigation activities should be in two specific areas: first to areas which previously had anadromous fish, but are now blocked by federally operated and regulated hydropower projects, then to areas that have the highest remaining proportional losses.

Highest priority should go to the blocked areas because the habitat losses have been mostly unmitigated for more than 60 years and because other direct and secondary impacts to wildlife populations and indigenous people related to the extirpation of anadromous fish has likewise been unmitigated. Indigenous people and wildlife species such as grizzly bear, black bear, mink, river otter, osprey and eagle were all directly affected by the extirpation of anadromous fish (loss of forage base and

cultural/religious practices). The remaining terrestrial and aquatic species faced, at a minimum, secondary impacts through the interruption of nutrient cycling due to the extirpation of anadromous fish. The marine nutrient source provided by the anadromous fish resource was paramount in driving the biotic function of watersheds within what is now the blocked areas.

Wildlife resources in the blocked areas have suffered and continue to suffer impacts related to utilization as a result of anadromous fish extirpation. Indigenous people relied upon the anadromous fish resource for a substantial portion of their food resource as well as for religious and ceremonial purposes. The extirpation of anadromous fish shifted and continues to shift the procurement of food resources historically dominated by anadromous fish to one dominated by resident fish and wildlife populations. Both resident fish and wildlife populations are subject to greater utilization pressure than what occurred prior to the extirpation of anadromous fish.

The intent is not to fund wildlife activities in the blocked areas to the exclusion of other wildlife activities within the basin. However, priority funding of wildlife projects is paramount to prudent and effective protection, mitigation and enhancement of wildlife resources. This is particularly true for the blocked areas where actions related to anadromous fish resource has little, if any benefit to wildlife resources in these areas and because reintroduction of anadromous fish, while a long-term vision, is currently unattainable.

Finding: Consistent with one aspect of this recommendation, the program states that “[w]ildlife mitigation should emphasize addressing areas of the basin with the highest proportion of unmitigated losses.” Section VI.A.4. The Council did not explicitly place a priority on addressing wildlife losses in the blocked areas. The program states longer-term goals and objectives, and in that context, the program’s objective is for all unmitigated construction and inundation losses to be mitigated. The reasons given by the Colville Tribes for making sure that wildlife mitigation is funded in the blocked areas make sense, whatever else is also being implemented in the wildlife program. If wildlife projects are not being proposed or recommended to the Council for funding in areas with significant amounts of unmitigated losses, including the blocked areas, this is an issue to be identified and resolved in the annual project review and funding processes. To the extent the Council’s action is considered a rejection of this the recommendation to place a priority on addressing wildlife losses in the blocked areas, the Council finds that the recommendation would be less effective than what the Council adopted in the systemwide protection, mitigation and enhancement of wildlife, Northwest Power Act §4(h)(7)(C). Implementation of the program as adopted, however, may well produce the very results the Colville Tribes were seeking in making this recommendation.

Source: Shoshone-Paiute Tribes
Recommendation No. 23

Recommendation: The Shoshone-Paiute Tribes recommended:

- Accord highest priority for wildlife projects to basins above blocked areas.
- Give highest priority to address special wildlife losses in areas that formerly had salmon and steelhead runs that were extirpated by hydroelectric projects.
- Accord highest priority to areas that are being managed for native species (resident, wildlife, anadromous), except in the case of substitution in a closed system.

Finding: The Council provided that wildlife mitigation should emphasize areas of the basin with the highest proportion of unmitigated losses, Section VI.A.4, but the Council did not adopt these recommended priority statements for the wildlife program, for the reasons stated just above in response to

the Colville Tribes' recommendation. To the extent the Council's action is considered a rejection of this recommendation, the Council finds that the recommendation would be less effective than what the Council adopted in the systemwide protection, mitigation and enhancement of wildlife, Northwest Power Act §4(h)(7)(C).

- Fund wildlife projects for losses incurred in the blocked areas.
- Mitigate in full for the wildlife losses incurred in blocked areas due to the loss of anadromous fish.

Finding: The Council adopted objectives and strategies that are consistent with the substance of these recommendations. Sections III.C.2.a.4, III.D.7. The Council called generally for the funding of mitigation to address losses caused by the hydropower system, including "secondary" losses of wildlife that are the result of the loss of fish due to the hydrosystem. This includes within the blocked areas.

- In wildlife land acquisitions, focus on critical habitats, particularly wetlands, access to waterways, and lands adjacent to existing wildlife management areas, as well as ceded or reservation lands.

Finding: The Council did not adopt an implementation provision at this level of detail for the wildlife and land acquisition provisions of the program. But the Council did adopt general objectives and strategies consistent with the general point of this recommendation, emphasizing protection of critical habitat, expanding out from and connecting to productive and protected habitat areas, the protection and restoration of wetlands and waterways and the connections to uplands, and so forth.

- In jointly funded projects, participating entities will share mitigation credits proportional to their funding amount.

Finding: This recommendation may indicate a misunderstanding of the wildlife program. Wildlife losses are assessed in terms of the habitat units lost due to the construction and operation of the hydrosystem, and mitigation crediting is defined in terms of matching habitat units protected or enhanced against the identified losses. Participating *entities* do not own or hold or have an entitlement to mitigation losses or credits or own, hold or have an entitlement to a particular funding amount. There may be instances in which crediting for a project must be allocated to the losses associated with different hydroprojects, but that is to be determined by biological considerations and agreements among the affected entities, not by proportion of funding allocated. The Council finds that the recommendation is inconsistent with the provisions of the Northwest Power Act concerning mitigation; that the recommendation would be less effective than what the Council adopted in the protection, mitigation and enhancement of wildlife, Northwest Power Act §4(h)(7)(C); and that what the Council adopted is more consistent with the general recommendations for the organization and operation of the program that came from the fish and wildlife agencies and tribes and others, §4(h)(6)(A), (7), (7)(A).

- Ensure the Duck Valley Indian Reservation receives settlement for primary wildlife losses, as do eleven other tribes in the Columbia Basin.

Finding: As noted above, losses are assessed in particular areas, and mitigation is to take place in those areas and be credited against the losses. To the extent there are wildlife losses associated with the development and operation of the federal hydrosystem in the areas in which the tribes of the Duck Valley reservation have a management interest, the program calls for wildlife mitigation to occur in those areas. What specific mitigation projects in that area are consistent with this general principle is an issue for the project review processes and subbasin planning.

Source:
Recommendation No.

Bonneville Power Administration
37

Recommendation: Bonneville recommended that the goal of the program be to implement wildlife habitat projects that, after necessary habitat improvements, will become self-sustaining and require little in the way of operation and maintenance funds. While enhancement measures may be cost effective, it is not usually cost effective to implement projects that take large amounts of funds to both enhance and maintain.

Bonneville also provided an extensive discussion and set of recommendations on mitigation crediting in general, which has been summarized and briefly responded to under the general heading of mitigation, in 2(c) above. But much of the discussion and some of the recommendations specifically apply to wildlife mitigation and crediting, and are noted here:

- Bonneville needs credit whenever the action mitigates fish and wildlife or their habitats-- regardless of the initial legal or policy impetus for taking the action.
- Crediting should be in terms of habitat quality and quantity. Fish and wildlife populations typically fluctuate too much to be fair or accurate gauges of the effectiveness of a particular mitigation.
- Crediting should be 1:1; that is, one credit for each habitat unit of equal quality mitigated.
- The region should use a habitat evaluation process to assess quality and quantity of habitat. Such models could be developed for all species for which we mitigate, aquatic or terrestrial.
- Bonneville mitigates for hydrosystem construction and operation losses.
- Where it is impossible to accurately translate habitat improvements into species improvements, credit should be based on the best available science, including but not limited to expert opinion models such as the Council's ecosystem diagnostic and treatment model.

Finding: The Council did not adopt an explicit goal of implementing wildlife projects so as to minimize operation and maintenance needs. But the Council did not reject or disagree with the principle stated either. Cost effectiveness is a key concern in deciding which projects to recommend for funding. A sound wildlife project will not be rejected simply because it will require some level of maintenance funding, but projects that require less maintenance funding for the habitat units gained must obviously be favored.

With regard to the crediting recommendations, the Council adopted provisions consistent with all of these recommendations except the recommendation that the crediting ratio in all circumstances be 1:1. For the basis of the Council decision, *see* the finding in response to Oregon's recommendation for a 3:1 crediting ratio. The Council finds that this particular recommendation does not complement the activities and recommendations of the region's fish and wildlife agencies and tribes as well as what the Council adopted, Northwest Power Act §4(h)(6)(A), (7), (7)(B), and would be less effective than what the Council adopted in the protection, mitigation and enhancement of anadromous fish, resident fish and wildlife, §4(h)(7)(C).

Source: Columbia River Alliance
Recommendation No. 39

Recommendation: Abandon the regional approach to wildlife restoration. Effects on wildlife from dam development have been mitigated for many years through land purchase and dedication, including creation of many wildlife refuges. Centralized planning offers no advantages to mostly single-state wildlife populations, and has the disadvantage of superfluous governmental layers, creating additional coordination costs.

Finding: The provisions of the Power Act do not allow the Council to abandon completely the regional approach to wildlife mitigation, as the Council must develop a region-wide program to protect, mitigation and enhance wildlife affected by the hydrosystem and must establish at least some general principles for guiding and allocating regional ratepayer expenditures to wildlife mitigation. But the Council otherwise agrees with the Alliance about the problems associated with directing specific wildlife mitigation decisions from a centralized planning approach. In calling for the specific planning and implementation of wildlife mitigation under the program to take place as part of local subbasin planning, the Council adopted provisions consistent with the substance of this recommendation. Sections III.D.7, V.

3(c)(vii) Implementation of resident fish mitigation projects/blocked-area mitigation and resident fish substitution

Source: Oregon Department of Fish and Wildlife
Recommendation No. 26

Recommendation: Oregon had a set of recommendations relating to resident fish mitigation and to mitigation in the areas blocked to anadromous fish, including mitigation through resident fish substitution. A finding follows each group of similar recommendations.

Oregon noted that a number of native resident fish populations throughout the basin are depressed to an extent that they require immediate attention. Oregon then recommended that the program focus on funding measures that provide immediate on-the-ground benefits to these depressed populations. The program should call for the completion of assessments of resident fish losses throughout the Columbia Basin and should take immediate actions to protect healthy populations and ensure the survival and recovery of listed fish species. The program should adopt measures that fully mitigate for resident fish losses. Measures should promote comprehensive and cooperative watershed management; ecosystem diversity; productivity and stability as integral components of fish management strategies in the Columbia River Basin; and should conserve the natural genetic diversity of native resident fish species, sub-species and unique stocks.

Finding: The Council adopted biological objectives for resident fish and habitat strategies consistent with this recommendation. Sections III.C.2.a.3, III.C.2.b and Appendix D, III.D.2 and D.3. The Council did not adopt a separate set of strategies related specifically to resident fish mitigation. It is through habitat and artificial production actions and hydrosystem operations that such mitigation takes place in the program, guided by the strategies adopted in the program for those activity areas, with specific objectives and measures to be determined in subbasin planning and projects reviewed and funded through the project review process.

Recommendation: Oregon also recommended that as mitigation for anadromous fish losses caused by the development and operation of the hydro dams, the Council should retain and broaden its Resident Fish Substitution Policy to address anadromous fish losses and mitigation requirements in all blocked areas (above Grand Coulee Dam, above the Hells Canyon Complex, in the Willamette and Deschutes river basins, and in other smaller blocked areas of the basin). Given the large anadromous fish losses, measures to date have not fully mitigated these losses. Resident fish substitution projects will:

- address unmitigated losses of salmon and steelhead attributable to development or operation of hydropower projects;
- occur in the subbasins where salmon and steelhead losses occurred; and
- be consistent with resident fish policies.

Finding: The Council retained its resident fish substitution policy and otherwise adopted provisions consistent with this recommendation. Sections III.A.1, III.C.2.a.2, III.D.2, III.D.3 (habitat strategy related to “substitution”). The resident fish substitution policy is as broad as recommended.

Recommendation: Oregon also recommended that the Council assess the feasibility of reestablishing anadromous fish passage into blocked areas, and where feasible, promote development and implementation of reintroduction programs.

Finding: The Council adopted this recommendation. Sections III.A.2, III.C.2.a.2.

Source:	Spokane Tribe
Recommendation No.	28
Source:	Montana Fish, Wildlife and Parks
Recommendation No.	31
Source:	Colville Confederated Tribes
Recommendation No.	33
Source:	Burns-Paiute Tribe
Recommendation No.	34
Source:	Idaho Department of Fish and Game
Recommendation No.	36
Source:	Shoshone-Bannock Tribes
Recommendation No.	38
Source:	Coeur d'Alene Tribe
Recommendation No.	42
Source:	Washington Department of Fish and Wildlife
Recommendation No.	43
Source:	Kalispel Tribe
Recommendation No.	48
Source:	Kootenai Tribe
Recommendation No.	50

Recommendation: These agencies and tribes provided the same or similar sets of recommendations regarding resident fish mitigation and resident fish substitution as mitigation for anadromous fish in blocked areas:

The program goal for resident fish should emphasize the long-term sustainability of native fish in native habitats where possible, but also recognize that where impacts have changed the native ecosystem, we can only protect and enhance the ecosystem that remains. This systemwide goal has implications for all resident fish program measures, which fall into two distinct categories:

Resident Fish Mitigation: Efforts to address the impacts caused by the construction and operation of the hydropower system.

Resident Fish Substitution: Efforts to address the loss of salmon and steelhead in those areas permanently blocked to anadromous fish as a result of the construction and operation of hydroelectric dams.

(The Colville Tribes recommended a different version of the opening clause: “The program goal for resident fish should emphasize a future condition that supports both human settlement (support tribal and non-tribal harvest and cultural and economic practices), while providing long-term sustainability of native fish in native habitats where possible, while recognizing that where impacts” Montana added: “The concept of ‘substitution’ should also apply where native resident fish species have been extirpated and existing conditions (environmental or economic) do not allow for native species restoration.”)

Measures in both categories should achieve the long-term system goals of protecting, mitigating and enhancing the health and viability of resident fish populations to meet consumptive and non-consumptive needs in the Columbia River Basin. The Council should recognize that fishing pressure on inland fish of the Columbia River Basin has increased appreciably since curtailment of ocean salmon fishing seasons. (All but Montana added versions of: “Fisheries shall be enhanced to allow for consumptive subsistence and recreational fisheries for the region’s Indian tribes, as well as consumptive and non-consumptive recreational fisheries for sport anglers.”)

Accomplishing these goals will require the participation of many parties whose practices now adversely affect the health of the ecosystem, including, but not limited to, hydropower facility operators. Improvements in operations to help resident fish could be found at the project site (i.e., in the reservoir or immediately below the dam) and also away from the project site (e.g., where a reservoir raises the water table in the surrounding area and forms pothole lakes amenable to resident fish production). Credit should be given for past mitigation actions associated with each hydropower project. Achieving these goals will necessitate basinwide coordination of all resident fish projects and with other basin activities to ensure consistency with the program's systemwide approach. (The Colville Tribes and Montana did not include this paragraph.)

A number of resident fish populations throughout the basin are depressed to an extent that they require immediate attention. To be effective, the fish and wildlife program must focus on funding measures that provide immediate on-the-ground benefits to fish and wildlife. To that end, the program should include the following policies:

The program should continue to accord highest priority to rebuilding to sustainable levels weak, but recoverable, native populations injured by the hydropower system, when such populations are identified by the fishery managers; then to resident fish substitution measures in areas that previously had salmon and steelhead, but where anadromous fish are now blocked by federally operated hydropower development. Because these losses have been largely unmitigated for more than 50 years, and because in-kind mitigation cannot occur, the Council should ensure that in any project ranking and selection process, projects satisfying these priorities be clearly distinguished from other projects. (Washington and the Colville Tribes added: "The distinction between these two highest priorities is a narrow one, applicable only to marginal choices among such projects and neither priority is meant to eclipse the other. Idaho and the Coeur d'Alene, Kootenai, Kalispel and Burns-Paiute tribes added the same thing without the very last clause.)

To promote comprehensive and cooperative watershed management; ecosystem diversity, productivity and stability as integral components of fish management strategies in the Columbia River Basin; and to conserve the natural genetic diversity within native resident fish species, sub-species and unique stocks, the following policies shall be applied: (The Colville Tribes added that another purpose was "to satisfy mitigation responsibility.")

- Protect, mitigate and enhance resident fish populations to the extent they were or are affected by construction and operation of dams.
- Protect high quality native habitat and attempt to restore potential habitat for native fish.
- Resident fish populations shall be enhanced to allow for consumptive subsistence and recreational fisheries.
- Protect and improve existing habitats that support important fisheries management objectives. (Only in the recommendations from the Spokane, Coeur d'Alene, Kootenai, Kalispel and Colville Tribes.)
- Increase the abundance of resident fish to distribute energy and nutrients within freshwater areas, especially above anadromous blockages. (Montana did not include this recommendation.)
- Protect, mitigate and enhance resident fish in and below hydropower system storage projects to the fullest extent practicable from negative impacts associated with water releases. (The words "and below" were not in the recommendations from Washington and the Colville Tribes.)
- In areas below storage projects, protect, mitigate and enhance resident fish that are affected by altered annual flow regimes, daily load following, temperature modifications and nutrient trapping.

- Have measurable objectives either with habitat and/or fish population targets. (The Colville Tribes recommended that the objectives be either “ecological (habitat and/or fish population)” or “management (catch-rates, harvest numbers, etc.)”.)
- Restore and re introduce native resident fish species (subspecies, stocks and populations) to near historic abundance throughout their historic ranges where habitats exist and where habitats can be feasibly restored. (Only in the Shoshone-Bannock Tribes’ recommendation.)
- Substitution is appropriate for lost salmon and steelhead in areas that previously had anadromous fish but where anadromous fish access is now permanently blocked by hydropower development and where in-kind mitigation cannot occur. (Montana had a different version, addressed in a separate recommendation and finding.)
- Resident fish substitution for anadromous fish losses should occur in the vicinity of the salmon and steelhead losses being addressed, but substitution and mitigation measures may occur on or off-site. (Idaho, Washington and the Shoshone-Bannock and Burns-Paiute Tribes reduced the sentence’s subject to just “Substitution . . .”)
- For substitution purposes, resident fish may include landlocked anadromous fish (e.g., white sturgeon, kokanee and coho) as well as traditionally defined resident fish species (e.g. largemouth bass).
- Use of non-native fish/non-native stocks for resident fish mitigation or substitution is appropriate when available habitat is unsuitable for native fish, or when it is not feasible to restore the altered habitat. Projects need to show that all reasonable precautions will be taken, based on the best available scientific knowledge, to avoid adversely affecting habitat for native resident fish and anadromous fish. (The version from the Spokane, Coeur d’Alene, Kootenai and Kalispel Tribes qualified “feasible” with the word “economically.”)

Finding: The Council adopted provisions consistent with these recommendations, if more general. The vision, biological objectives for resident fish mitigation, resident fish substitution and environmental characteristics, and the habitat and hydrosystem strategies contain provisions consistent with and in part derived from these recommendations, including:

- goals and objectives based on the need to mitigate for adverse effects on resident fish from the development and operation of the hydrosystem dams
- a goal of providing abundant opportunities for subsistence and recreational fisheries
- a focus on protecting and restoring the natural ecological functions and habitats that support these fish
- recognition that where the ecological conditions are irrevocably altered, the program will protect and enhance the habitat and species assemblages compatible with the altered ecosystem
- emphasis on native species in native habitats as a guide for the needed biological conditions, but with recognition of the possible use of non-native species of mitigation that meet the standards for compatibility with altered ecosystem conditions and minimization of adverse effects on native species
- retention of the “resident fish substitution policy,” with objectives and strategies calling for enhancement of resident fish to mitigate for lost anadromous fish in the blocked areas where in-kind mitigation cannot occur
- hydrosystem strategies that emphasize systemwide water management and operating conditions that support resident fish populations
- a biological objective to restore native resident fish to near historic abundance throughout their historic ranges where habitat conditions exists or can feasibly be restored

Sections III.A.1, A.2, C.1, C.2.a.2, C.2.a.3, C.2a.3, D.2, D.3, D.6, Appendix D and Appendix D.

The Council did not adopt the recommended statement of project funding priorities within resident fish projects, which would assign highest priority to projects intended to rebuild to sustainable levels weak but

recoverable native populations and to resident fish substitution projects in the blocked areas. The Council included this project funding priority statement in the 1995 program, but decided not to retain it here. The Council maintained a general, across-the-program funding allocation that assures a significant portion of the fish and wildlife program funds will be used to address resident fish mitigation and substitution needs. Section VI.A.4. But specific funding allocations are to be determined based on the specific needs identified in subbasins and ecological provinces, consistent with the vision, biological objectives and strategies in the program.

Source:	Spokane Tribe
Recommendation No.	28
Source:	Burns -Paiute Tribe
Recommendation No.	34
Source:	Idaho Department of Fish and Game
Recommendation No.	36
Source:	Shoshone-Bannock Tribes
Recommendation No.	38
Source:	Coeur d'Alene Tribe
Recommendation No.	42
Source:	Washington Department of Fish and Wildlife
Recommendation No.	43
Source:	Kalispel Tribe
Recommendation No.	48
Source:	Kootenai Tribe
Recommendation No.	50

Recommendation: These agencies and tribes recommended various versions of what was called a Blocked Area Mitigation Policy, many of the provisions of which repeat or overlap with the recommendations from the same agencies and tribes for resident fish mitigation policies discussed just above. The Blocked Area Mitigation Policy recommendation included both introductory text and specific policies and standards, as follows:

The construction and operation of specific dams directly led to the complete and immediate extirpation of all anadromous and some resident fish populations throughout portions of the Columbia River and its tributaries. Such is the case above the Chief Joseph Dam, Dworshak Dam, Hells Canyon Dam, all Willamette projects and other smaller blocked areas of the basin. The loss of biomass, hydrological alteration, and subsequent management of the landscape attributable to the existence of the dam has severely altered the natural processes and ecosystem functions that defined and maintained the natural resources and tribes of these areas.

Until self-sustaining anadromous fish populations are restored to the blocked areas of the basin, maintaining the interim "Substitution Policy" for areas in which anadromous fish have been extirpated is essential. The long-term goal continues to be the reintroduction of anadromous fish to the blocked areas. The feasibility of reintroduction will be assessed in a step-by-step manner, consistent with the goals of the fish and wildlife managers within the various "blocked areas" of the Basin.

Losses in the blocked areas are so great that mitigation can never be accomplished through any single approach. This is especially so if the Council is going to uphold the provision of the Act that requires that the mitigation of these impacts be done in a manner that assures the Pacific Northwest an adequate, efficient, economical, and reliable power supply. The Blocked Area Mitigation Policy must

have a high priority within the program, because of the need to mitigate the impacts that the elimination of and alteration of the fish and wildlife resources has had on the communities in these areas.

In its analysis of the contribution of the hydropower system to salmon and steelhead losses (see Council documents 87-15, 87-15A and 87-15B), the Council analyzed the extent to which resident fish substitutions could be used to mitigate losses of salmon and steelhead production in the blocked areas. Those assessments form the basis for the blocked area mitigation efforts. Activities implementing the program's Blocked Area Mitigation Policy must remain consistent with the policies of the fish and wildlife agencies and tribes within these areas. In addition, management efforts must be based upon the best scientific knowledge available for managing these altered systems.

In order to meet the obligation to mitigate for extirpated salmon and steelhead, the Council must shift the focus to a multi-resource based approach. The magnitude of this loss cannot be mitigated with resident fish populations alone. Therefore, wildlife and botanical resources must also be used to offset this loss along with resident fish until anadromous fisheries are restored to the "blocked areas." Because in-kind mitigation cannot occur, the Council should provide that in any project ranking process the highest priority will be given to projects that restore weak but recoverable native fish stocks, then to fish substitution measures, and finally to other projects. (This paragraph is from the recommendations of Idaho, Washington and the Shoshone-Bannock and Burns-Paiute Tribes. The Spokane, Coeur d'Alene, Kootenai and Kalispel Tribes recommended a slightly different version of the first part of this paragraph: "In order to meet the mitigation obligation associated with the extirpation of salmon and steelhead, it is necessary to initiate a multi-resource based approach directed at maximizing the capabilities of altered watersheds to support priority aquatic and terrestrial resources. It is recommended that this policy remain in effect until anadromous fisheries are restored to the 'blocked areas.'")

The Council should conclude that: (1) compensation mitigation in blocked areas is appropriate where salmon and steelhead were eliminated by the development and operation of the hydroelectric projects; (2) to treat the Columbia River and its tributaries as a system, substitutions are reasonable for lost salmon and steelhead in areas where in-kind mitigation cannot occur; and (3) flexibility in approach is needed to develop a program that complements the activities of the fish and wildlife agencies and tribes and is based on the best available scientific knowledge.

Include the following policies:

- Mitigation activities for special social and tribal losses associated with the extirpation of anadromous and some resident fish resources will be conducted in the blocked areas of the basin. These activities will be in addition to construction, inundation, and operational losses suffered within these areas of the basin.
- Mitigate for the lost functions that the anadromous fisheries provided (e.g. subsistence and recreational fisheries).
- Address unmitigated losses of salmon and steelhead attributable to development or operation of hydropower projects.
- Mitigation should generally occur in the vicinity of the salmon and steelhead losses being addressed.
- Act consistent with the resident fish and wildlife policies of the fish and wildlife agencies and tribes.
- Mitigation tied to the extirpation of anadromous fish in the blocked areas of the basin must occur above the appropriate blocked area.

Finding: The Council adopted provisions consistent with and in part based on these recommendations, including retention of the existing substitution policy, if more general. Sections

III.A.1, C.2.a.2, D.3, D.6, D.7. The Council did not explicitly recognize wildlife enhancement as substitution for the loss of anadromous fish in the blocked areas. But the objectives and strategies in a multi-species subbasin plan intended to address both fish and wildlife losses, and which should include mitigation for secondary losses that stem from the effects on wildlife from the loss of fish resources, might logically link some degree of wildlife enhancement to the mitigation objectives for addressing fish losses. This is a decision to be made on a subbasin-specific basis. The Council also did not adopt the recommended statement of project funding priorities (to give highest priority to projects that rebuild weak but recoverable native populations and to resident fish substitution projects in the blocked areas) for the reasons given in the findings on the preceding recommendation.

Source: Shoshone-Paiute Tribes
Recommendation No. 23

Recommendation: The Shoshone-Paiute Tribes recommended their own version of the blocked-area mitigation policies similar to the policies recommended by other agencies and tribes described above:

- Accord highest priority for resident fish projects to basins above blocked areas.
- Accord highest priority to areas that are being managed for native species (resident, wildlife, anadromous), except in the case of substitution in a closed system.
- In the blocked areas, investigate the feasibility of anadromous fish passage.
- Work with Bonneville Power Administration, Idaho Power Corporation, Corps of Engineers, and the Bureau of Reclamation to take a realistic look at anadromous fish passage over Hells Canyon Complex, CJ Strike, and other barriers in the Snake River basin. In doing this, over 30% of the original anadromous fish spawning areas would be opened back up.
- Substitution projects may and can occur in the vicinity of anadromous fish extirpation.
- Mitigate for lost resident fish populations due to the loss of ecological functions and relationships as a result of lost anadromous fish resources in the blocked areas.
- Mitigate for past losses of anadromous fish in areas where anadromous fish have been extirpated, until the time that anadromous fish return these areas.
- Mitigate for anadromous fish losses through the use of the hatchery system in the extirpated areas.

Finding: The Council retained its substitution policy and other provisions generally consistent with this recommendation, with two exceptions. III.A.1, A.2, C.2.a.2, D.2, D.3. The Council did not adopt a specific strategy concerning passage over Hells Canyon Dam and others in the Snake River. The Council in general called for an evaluation of the feasibility of restoration of anadromous fish into blocked areas. Sections III.A.2, C.2.a.2. The later more specific stages of the program revision process will be the place to consider a strategy specific to the Snake basin. Also, the Council did not adopt the recommended statements of project funding priorities within resident fish projects. As explained above, specific funding allocations are to be determined based on the specific needs identified in subbasins and ecological provinces, consistent with the vision, biological objectives and strategies in the program.

Source: Montana Fish, Wildlife and Parks
Recommendation No. 31

Recommendation: The concept of “substitution” should also apply where native resident fish species have been extirpated and existing conditions (environmental or economic) do not allow for native species restoration.

Finding: The program has provisions consistent with the underlying substance of this recommendation. The Council did not adopt Montana’s recommendation that the meaning of the term “substitution” as used in the program explicitly include the replacement of one kind of resident fish species with another where the native resident fish species has been extirpated and existing conditions (environmental or economic) do not allow for native species restoration. The program continues to define “substitution” with reference to the replacement of anadromous fish with resident fish where in-kind mitigation of anadromous fish is not feasible. However, if environmental conditions make it impossible to mitigate in-kind for losses of native *resident* fish, efforts to protect and enhance the habitat and species assemblages compatible with the altered ecosystem are appropriate mitigation under the program.

Source: Spokane Tribe
Recommendation No. 28
Source: Coeur d’Alene Tribe
Recommendation No. 42
Source: Kalispel Tribe
Recommendation No. 48
Source: Kootenai Tribe
Recommendation No. 50

Recommendation: These tribes recommended that the Council address the basin’s longstanding inequity in mitigation and associated funding by placing a greater emphasis on and greater funding allocation for the fish and wildlife projects in the “blocked areas.” Nearly 70% of all past mitigation funding and projects under the program have been concentrated within the mid-Columbia, lower Columbia and lower Snake River areas. Other areas of the region have suffered equal or greater hydropower losses to fish and wildlife. In particular, resident fish and wildlife mitigation has been sorely deficient in the upper Columbia storage reservoirs and their impacted areas, due to the program’s historical imbalance in favor of lower Basin anadromous fish runs. Both the biological losses and the cultural losses of the upper Columbia Tribes should be addressed more equitably with a greater emphasis on and greater funding allocation for the fish and wildlife projects needs in this area.

The Coeur d’Alene Tribe added that the Council should adopt a program protects, mitigates, and enhances resident fish and wildlife resources in a manner that is more comparable to the anadromous fish effort. The new program must not lose sight of the statutory obligation that the Power Act has established for mitigating and compensating impacts occurring in the upper Columbia River, as well as the other blocked areas of the Basin. It is imperative that the new program not become merely another anadromous fish recovery plan that fails to address upriver tribal and social losses or one that chooses to address these resources as a “lower or secondary” priority. This principle must remain a very high priority in all decisionmaking, especially during resource allocation and accompanying project review and prioritization activities. The funding mechanisms within the existing program have continually failed to meet the protection, mitigation, and enhancement responsibilities in the upriver areas as well as Bonneville’s trust obligations to the Coeur d’Alene Tribe.

These tribes then recommended that because the upper Columbia blocked area is the largest blocked area within the basin, and considering the size and complexity of issues associated with this area, a minimum of twenty percent or \$36 million, whichever is greater, of the direct program funds should be allocated to this area.

Finding: In the 1995 program amendments, the Council recognized that resident fish programs, including the substitution programs in the upper Columbia blocked area, had not been receiving sufficient resources. The Council thus adopted a provision recommending that not less than 15% of the Bonneville direct fish and wildlife budget be allocated to resident fish.

In this amendment process the Council concluded that the budget allocation provision had succeeded in bringing resources to an under-funded part of the program, and that the Council needed to continue to set a budget direction that made sure this part of the program received sufficient funding. The Council retained the provision that requires that at least a significant 15% portion of the budget go to resident fish. Sections III.C.2.a.2, VI.4. The Council concludes that this action is consistent in general with the substance of these recommendations. The Council did not adopt the specific budget allocation recommended for the upper Columbia blocked area. The Council concluded that a determination of the size and specific allocation of the direct program budget must be reserved for a later phase of the program amendment process when the project funding needs will be more greatly informed by subbasin planning.

Source: Columbia River Inter-Tribal Fish Commission
Recommendation No.: 40

Recommendation: The Commission recommended comprehensive sets of habitat and production standards that have been summarized and responded to above. A few of the standards recommended by the Commission recommended are directly relevant to resident fish:

- Protect, mitigate and enhance resident fish populations adversely affected by construction and operation of dams, including impacts from water releases from storage projects, altered annual flow regimes, daily load following, temperature modifications and nutrient trapping, to the maximum extent practicable.
- Mitigate hydrosystem and other impacts by native resident fish restoration, if possible, and native/non-native fish substitution, where appropriate:
 1. Utilize substitution in areas once having anadromous fish, but which are currently blocked by dams and where in-place, in-kind mitigation cannot occur in the short term and;
 2. Utilize substitution in the vicinity of the areas once having anadromous fish, but allowing substitution and mitigation on- or off-site
- Develop artificial propagation and management strategies and techniques for white sturgeon populations above Bonneville Dam
- Eliminate introduction of new exotic species; control populations of existing exotic species.

Finding: The Council adopted biological objectives and habitat and hydrosystem strategies consistent with and partly based on this recommendation. Sections III.A.2, C.2.a.2, D.2, D.3, D.6. The Council did not adopt or reject artificial production strategies specific to white sturgeon above Bonneville Dam; that will be a subject for the more specific planning phases focused on specific areas. The Council did not call for a complete end to introduction of new exotic species, but included a habitat strategy based on the principle that even in degraded or altered environments, native species in native habitats ordinarily provide the best starting point and direction for needed biological conditions. Any proposal to produce or

release non-native species must overcome this strong presumption in favor of native species and habitats and be designed to avoid adverse impacts on native species. Section III.D.3

Source: PNUCC
Recommendation No. 55

Recommendation: PNUCC recommended the following policies that related to resident fish mitigation:

- Systemwide water management, including flow augmentation should balance the needs of anadromous species with those of resident fish species in streams and storage reservoirs, and with other uses of the Columbia Basin waterways.
- Resident fish and wildlife that are protected under the Endangered Species Act will be given equal priority to protected anadromous fish when planning reservoir operations. The Council should add this policy statement because resident fish and wildlife listed under the ESA are not managed by the same federal agencies as anadromous fish. This offers the possibility for conflicts and inconsistent recommendations.
- Native species in native habitats provide the best template and direction for needed biological conditions. Non-native species, including resident fish substitution programs, must be designed to avoid adverse impacts on native species. This is especially important for weak naturally spawning populations listed under the ESA.

Finding: The Council adopted a vision, planning assumptions and habitat and hydrosystem provisions consistent with this recommendation. Sections III.A.1, A.2, D.3, D.6. The Council did not explicitly call for equal priority for listed resident fish with listed anadromous fish in reservoir operations, but the principle is consistent both with provisions in the program the Council did adopt and with the requirements of the Endangered Species Act.

3(c)(viii) Strategies/standards to guide the consideration of ocean and estuary conditions

Source: Oregon Department of Fish and Wildlife
Recommendation No. 26

Recommendation: Oregon recommended that in developing and implementing strategies, the program should apply the following standards for consideration of ocean and estuary conditions:

- Actions under the program should contemplate, and where appropriate evaluate how conditions of the Columbia River estuary, nearshore plume, and adjacent marine area affect abundance of fish and wildlife that use those habitats. Abundance, productivity and biological diversity of fish and wildlife that use estuary and marine habitats determine how well populations survive and prosper under varying estuary and marine conditions. The magnitude of changes in abundance will be determined by the conditions populations experience in each of these environments.
- Actions under the program should contemplate, and where appropriate evaluate and address the effects that development and operations of the federal hydrosystem have had and continue to have on the Columbia River estuary and near-shore plume. The estuary, nearshore plume and adjacent marine environment are influenced by, and influence the Columbia River Basin ecosystem.
- The policy proposed in the Council’s *Strawman* should be revised: “Historically, salmon and steelhead in the Columbia River accommodated ocean mortality and environmental variability.” Current research and analysis suggest today’s ocean warming trends may preclude the recovery of many stocks. The program needs to reflect this critical uncertainty by considering the relationship of ocean conditions to management actions in the freshwater environment.

Finding: The Council adopted provisions consistent with and based on this recommendation, as follows:

- One of the specific planning assumptions underlying the program is that the effect of ocean habitat on salmonid species should be considered in evaluating freshwater habitat management to understand all stages of the salmon and steelhead life cycle. Section III.A.2
- A provisional biological objective concerning the estuary and nearshore is to “[i]dentify, protect and restore ecosystem functions in the Columbia River estuary and nearshore ocean discharge plume as affected by actions within the Columbia River watershed.” This includes evaluating “flow regulation, river operations and estuary-area habitat changes to better understand the relationship between estuary and near-shore plume characteristics and the productivity, abundance and diversity of salmon and steelhead populations.” Section III.C.2.b and Appendix D (seventh objective).
- Another of the provisional biological objectives is to “[e]nhance the natural expression of biological diversity in salmon and steelhead populations to accommodate mortality and environmental variability in the ocean.” Section III.C.2.b and Appendix D (eighth objective).
- The ninth provisional biological objective addresses the issue of environmental variability generally, consistent with the substance of the recommendation: “Accept significant variation in the productivity, capacity and life-history diversity for any particular population over any particular time period, as part of the normal environmental condition. A measure of whether key ecological functions have increased sufficiently will be whether the system can accept normal environmental variation without collapse of the fish and wildlife population and community structure.” Section III.C.2.b and Appendix D (ninth objective).
- The habitat strategies emphasized that estuary habitat had to be an important consideration of any Columbia basin fish and wildlife program: “The estuary is an important ecological feature that is negatively affected by upriver management actions and local habitat change. While less is known about the potential for improvement in the estuary than is known about the potential for

improvement in most other parts of the Columbia River Basin, there are indications that substantial improvements are possible and that these improvements may benefit most of the anadromous fish populations.” Section III.D.3

- With regard to consideration of ocean (as opposed to estuary) conditions, the program contains a primary strategy to “[i]dentify the effects of ocean conditions on anadromous fish and use this information to evaluate and adjust inland actions.” Section III.D.8. Two strategies that follow from this direction are:

Manage for variability: Ocean conditions and regional climates play a large role in the survival of anadromous fish and other species in the Columbia River Basin. Management actions should strive to help those species accommodate a variety of ocean conditions by providing a wide range of life history strategies.

Distinguish ocean effects from other effects: Monitoring and evaluation actions should recognize and take into account the effect of varying ocean conditions and, to the extent feasible, separate the effects of ocean-related mortality from that caused in the freshwater part of the life cycle.

- The Council stated an intent to establish a basinwide research plan which is to identify major research topics, including specifically ocean research, and establish priorities for research funding. Section III.D.9.
- The estuary and relevant ocean areas have been included within the specific planning units of the program. Sections III.D.3, IV.A (Table 1), IV.C.

Source: Columbia River Inter-Tribal Fish Commission
Recommendation No.: 40

Recommendation: The Commission recommended the following strategies for estuary and ocean habitat:

Estuary Habitat

- Enforce existing laws and regulations governing estuarine water quality and habitat condition and land or channel processes that affect water quality and habitat condition. Understanding of the impacts of water quality conditions on aquatic biota of estuaries is generally adequate for justifying strict adherence to limits to various pollutants and physical alterations to habitat. More effective monitoring and enforcement of existing laws governing water quality and other actions affecting habitat quality are needed to protect fish during this portion of their life cycle. Restore estuary quality while restoring total area of estuary habitat toward former levels of abundance.
- Federal water management agencies, states and tribes should cooperatively assemble, evaluate, disseminate information on the existing laws and regulations governing ocean ecological condition. Cooperatively establish goals and standards for water and physical/biological habitat quality for estuary habitats of salmon. Identify linkages between desired habitat conditions and the processes and sources leading to declining conditions. Identify means for controlling cumulative impacts from pollutants in the estuary environment.
- Identify trends in estuarine habitat quality linked to salmon productivity; report findings to fish and wildlife managers for long-term planning.

Ocean Habitat

- Enforce existing laws and regulations governing ocean water quality and habitat condition and land or channel processes that affect water quality and habitat condition. Understanding of the impacts of water quality conditions on aquatic biota of oceans is generally adequate for justifying strict adherence to limits to various pollutants and physical alterations to habitat. More effective

monitoring and enforcement of existing laws governing water quality and other actions affecting habitat quality are needed to protect fish during the estuary portion of their life cycle. While some of the ocean carrying capacity limitation is attributable to climatic variations, oceanographers have also noted worldwide reductions in ocean productivity linked to pollution. There is abundant reason for restoring ocean quality to the extent affected by human action.

- Federal water management agencies, states and tribes should cooperatively assemble, evaluate, disseminate information on the existing laws and regulations governing ocean ecological condition. Cooperatively establish goals and standards for water and physical/biological habitat quality for ocean habitats of salmon. Identify linkages between desired habitat conditions and the processes and sources leading to declining conditions. Identify means for controlling cumulative impacts from pollutants in the ocean environment.
- Identify trends in ocean habitat quality linked to salmon productivity; report findings to fish and wildlife managers for long-term planning.

Finding: The estuary and ocean policies, objectives and strategies described above are consistent with and at least in part based on the substance of the Commission's recommendations. The Council did not describe the estuary and nearshore habitat objectives specifically in terms of water quality, but the Council agrees that water quality is one of the key attributes of estuary conditions. Also, as noted elsewhere, the program includes objectives and subbasin planning guidance to focus attention on water quality as a key component of the habitat conditions that the program seeks to obtain for fish population improvements. Sections III.C.2.b and Appendix D (second and third objectives), V.A.3 and A.5. The Council did not include a specific reference to compliance with and enforcement of laws and regulations on the grounds that compliance with the law is a basic, on-going obligation of the Council and everyone else under the program and enforcement of these laws and regulations is not in the ordinary sense a part of program activities. Specific habitat restoration activities that improve the chances of meeting existing water quality standards might very well be part of a specific subbasin or estuary plan.

Source: National Marine Fisheries Service
Recommendation No. 54

Recommendation: The National Marine Fisheries Service recommended:

- Add to the guidelines proposed in the Strawman a principle expressing that a key reason to focus on estuarine and ocean ecology is to understand the role of ocean/estuarine variability in the life cycle context. This is needed to understand the importance and role of all other risks and for evaluating the effects of changes in habitat, harvest, hydrosystem operations, and so forth on population growth rate and risk of extinction.
- Add a principle that acknowledges that understanding the nature of variability in the estuary and ocean may reveal sources of mortality that can be addressed. For example, the demonstration of density dependent mortality in the near shore ocean may be addressable by reducing hatchery production during periods of poor ocean conditions.
- The Council should help fund research, restoration plan development and actions necessary to restore ecological function to the estuary. Research is needed to evaluate physical and ecological changes from development in the estuary, effectiveness of fish protection and habitat restoration activities, physical parameters and biological effects of alterations in the flow regime, biophysical and ecological effects of salinity change on plant and animal communities and associated food web dynamics, and more. A comprehensive restoration plan is then needed, building on these evaluations and on the Lower Columbia River Estuary Program. Bonneville, in coordination with the NMFS Science Center, EPA, the FWS, the LCREP, and others should help fund the research,

restoration planning and actions necessary to restore ecological function to the estuary. Preliminary feasibility studies should be completed promptly so that immediate actions can be identified and taken. These actions should be in addition to those already committed to by the Corps in their Lower Columbia River Navigation Channel Deepening proposal.

Finding: The estuary and ocean policies, objectives and strategies described above in response to Oregon's recommendations are consistent with and based on the substance of the Fisheries Service's recommendations. As for research, the Council stated an intent to establish a basinwide research plan which is to identify major research topics, which should including ocean and estuary research, and establish priorities for research funding. Section III.D.9. The Council did not include provisions for funding specific estuary research and a restoration plan. These matters are for the later, more specific planning stages of the program revision process and for the project review and funding process.

Source:	Burns-Paiute Tribe
Recommendation No.	34
Source:	Shoshone-Bannock Tribes
Recommendation No.	38
Source:	Washington Department of Fish and Wildlife
Recommendation No.	43

Recommendation: Washington and the Shoshone-Bannock and Burns-Paiute Tribes recommended that these general principles guide the Council in the consideration of ocean and estuary conditions when deciding matters under the program:

- The Council should view the estuary of the Columbia River, its near-shore discharge plume, and adjacent marine area as part of an ecosystem that includes the Columbia River Basin itself. The abundance of salmon reflects the overall condition of the entire ecosystem and, therefore, variability in the conditions of both the freshwater and marine environments. (Washington had slightly different wording of the first sentence, and did not include the second.)
- Salmon and steelhead in the Columbia River accommodate ocean mortality and environmental variability through a sufficient level of productivity and a wide range of biological diversity. As a result, taking ocean conditions into account involves ensuring that the program and its objectives, strategies, and projects are designed and evaluated in regard to their potential to restrict or enhance the natural expression of biological diversity in salmon populations. Because ocean conditions and related weather patterns play a large role in the survival of anadromous fish species in the Columbia River basin, management actions should strive to help those species accommodate a variety of ocean conditions by providing a sufficient level of adult productivity and a wide range of biological diversity. (Washington presented the same concept a bit differently: "We recommend that population objectives for salmon, steelhead, and white sturgeon in the Columbia River accommodate ocean mortality and environmental variability through a sufficient level of productivity and a wide range of biological diversity.")
- The Columbia River estuary and near-shore plume are important ecological features that likely have been, and continue to be, negatively impacted by upriver management actions and local habitat change. River uses and management actions in and above the estuary must consider the effects on the estuary and the plume for the fish and wildlife species of concern to the region. Consideration of ocean conditions should include evaluation of flow regulation and river operations in regard to their impacts on the estuary and near-shore marine areas as well as better understanding of the effect of ocean conditions outside the estuary and plume.

- Monitoring and evaluation actions should recognize and take into account the effect of varying ocean conditions and, to the extent feasible, separate out the effects of ocean-related mortality from that caused in the freshwater part of the lifecycle.

Finding: The policies, objectives and strategies regarding estuary and ocean conditions described above in response to Oregon's recommendations are consistent with and based on these recommendations.

Source: Inland Ports and Navigation Group
Recommendation No. 49

Recommendation: The ports and navigation group recommended tough action without delay to eradicate or reduce to manageable levels the devastating predation near the mouth of the Columbia River. The Council should make predator control a condition precedent for spending huge amounts of money on programs elsewhere where the chances for actual short-term impacts are less. The Council should embrace more aggressive initiatives in ridding the estuary of Caspian terns, a severe source of smolt mortality. Cormorants, once deserving federal protection due to serious declines in their population, now have rebounded in numbers to the degree that they pose another serious threat to juvenile fish in the estuary. Cormorant controls, now being only discussed by federal agencies must be stepped up and strengthened.

In addition, the region deserves straight talk about the possible adverse impact on fish survival of shifts in ocean temperature and climate change, and how this can put at risk and undo different expensive recovery steps being urged on our region. We also deserve an explanation of how ocean temperature and related changes can improve fish recovery.

Finding: Consistent with this recommendation, the Council included an overarching policy that the effects of ocean habitat be considered in evaluating freshwater habitat management, and a corresponding key strategy to identify the effects of ocean conditions on anadromous fish and use this information to evaluate and adjust inland actions. Sections III.A.2, D.8.

The program amendments did not include specific objectives and actions relating to specific predation problems. These matters are for the more specific planning phases in the program revision process and, especially, for the project review and funding process, which includes projects to address avian predation.

3(c)(ix) Monitoring, evaluation and research strategies

Source: Oregon Department of Fish and Wildlife
Recommendation No. 26

Recommendation: Oregon recommended that in developing and implementing strategies, apply the following standards on monitoring and evaluation:

- Monitoring and evaluation efforts should determine the extent to which actions achieve biological objectives and visions at the subbasin, province and basin levels.
- Monitoring and evaluation efforts should assess how productivity, abundance, life history diversity and structural complexity of a representative set of fish and wildlife populations respond to actions under the program.
- Monitoring and evaluation efforts should assess how key physical and habitat characteristics of a watershed respond to actions under the program.
- Monitoring and evaluation efforts should be designed to encourage explicit statements of hypotheses and assumptions, rigorous evaluation of evidence for and against each hypothesis and assumption, and comprehensive and transparent testing of hypotheses and assumptions.

Finding: The Council adopted provisions consistent with this recommendations, including standards for monitoring and evaluation at the subbasin, province and basin levels and the role of biological objectives for population and environmental characteristics in monitoring and evaluation. Sections III.C.2, C.4, III.D.9, IV.B, V.A.5. The recommendation for explicit statements and rigorous evaluation of hypotheses and assumptions is reflected in the general policy and underlying scientific principle to undertake management actions in an adaptive, experimental manner. Sections III.A.2 (fourth planning assumption), B.2 (Principle 7).

Source: National Marine Fisheries Service
Recommendation No. 54

Recommendation: The National Marine Fisheries Service recommended the following standards regarding research, monitoring and evaluation:

- Acknowledge that accountability is a principal reason for an effective research, monitoring and evaluation program. The Council needs to know what works and what does not; what they are getting for the investment of public dollars; and how to narrow uncertainty. Several agencies, tribes and other entities monitor and evaluate their own habitat programs, and in some cases like the Northwest Forest Plan, these efforts programs are quite sophisticated. However, comprehensive monitoring and evaluation (covering federal and non-federal initiatives from a basin-wide perspective) are nobody's responsibility. Without this comprehensive perspective, it will be very difficult to evaluate the progress of improving survival for listed species that are broadly distributed, like the Columbia River salmon and steelhead. The Council should work closely with the federal agencies, states and tribes to solve this priority issue.
- Build the development of nested or tiered performance measures and performance standards into the research, monitoring and evaluation program. In keeping with the need to improve accountability, subbasin and project planners need to know how to prioritize their actions. Established performance measures and standards should help planners make decisions about actions that will result in reportable, measurable benefits. Research, monitoring and evaluation needs to be set up with a nested context. At the basin level, it establishes a framework for

research and monitoring priorities, performance measures and standards. Research, monitoring and evaluation becomes more refined and specific at smaller scales. Findings and accomplishments at smaller scales are then fed back up to the basin level for program reporting and accounting.

- Build a research plan around the following five major questions:
 1. What is the role of hydropower projects relative to other natural anthropogenic sources of variability in preventing salmon recovery?
 2. Can release of hatchery fish be used to (a) support sustainable fisheries without harming wild stocks and (b) aid in the recovery of wild stocks?
 3. To what extent does the quantity and quality of freshwater habitat affect abundance and population growth of Pacific salmon?
 4. Is exploitation of salmonids compatible with recovery?
 5. How do climate/ocean conditions directly and indirectly affect salmon stocks?
- Acknowledge the NMFS recovery program and the role that the Technical Recovery Teams can play in identifying key uncertainties and the specific monitoring needs that are required to evaluate progress toward recovery goals. The Council's research, monitoring and evaluation needs are broader than those of listed anadromous fish. However, NMFS assumes that it is a high priority to address key uncertainties and to monitor and report progress on recovering listed fish. NMFS has initiated a recovery plan process in which the first step will be for technical teams to establish delisting criteria for determining when species are recovered. Developing a research, monitoring and evaluation framework for tracking progress toward recovery goals should be a very high priority.

Finding: The Council adopted a program framework and monitoring and evaluation provisions consistent with the substance of this recommendation. The recommendation describes precisely how the program's framework structure is intended to work -- nested or tiered levels of planning, becoming more specific at the more local levels, with objectives and monitoring and evaluation at the basin, province, subbasin and individual project levels, to a degree appropriate to each level. Sections II.C, III.C.2, C.4, III.D.9, IV.B, V.A.5. If implemented, the result could indeed be a comprehensive monitoring and evaluation program for fish and wildlife in the Columbia River basin, incorporating efforts on both federal and non-federal lands. The goal would be to evaluate progress across the basin in improving habitat conditions and biological performance for the key species in the basin, including listed species.

The Council stated as a general policy the need to incorporate assessments, planning and recovery actions under the Endangered Species Act as part of the Council's goal of systemwide planning and monitoring and evaluation. *See, e.g.,* Sections II.C, III.A.1, V.A.3, A.5, and A.6. This includes consideration of the Fisheries Service's recovery planning efforts and the use of the Technical Recovery Teams in that effort.

The Council did not adopt or reject the recommendation of the Fisheries Service with regard to what should be the key elements of a basinwide research plan for the program. At this stage in the program revision process, the Council stated an intent to establish a basinwide research plan, similar to the subbasin plans, which will identify key uncertainties for the program and its biological objectives and the steps needed to resolve those uncertainties. The plan is to identify major research topics, including ocean research, and establish priorities for research funding. The research plan should be developed with consideration for the vision, objectives and strategies in the program and is to be coordinated with the research elements of the mainstem plan and the subbasin plans. The process for developing the plan and associated budgets will ensure independent scientific review, input from fish and wildlife agencies and tribes, independent scientists, and other interested parties in the region. Section III.D.9. The development of the research plan is the place to consider the recommendations for specific research questions.

Source:	Montana Fish, Wildlife and Parks
Recommendation No.	31
Source:	Colville Confederated Tribes
Recommendation No.	33
Source:	Burns-Paiute Tribe
Recommendation No.	34
Source:	Shoshone-Bannock Tribes
Recommendation No.	38
Source:	Washington Department of Fish and Wildlife
Recommendation No.	43
Source:	U.S. Fish and Wildlife Service
Recommendation No.	46

Recommendation: These agencies and tribes recommended a set of standards for research, monitoring and evaluation. These recommended standards were based on research, monitoring and evaluation standards proposed in the Council’s Strawman. The Colville Tribes recommended only the lead-in paragraph and the first standard.

Actions taken under this program must be monitored and evaluated to determine whether they achieve the biological objectives established at the subbasin, province and basin levels. In the course of creating plans, and in implementing the program, the Council will work with interested parties to develop and recommend for funding specific monitoring and evaluation activities consistent with the following principles: (Montana and the Shoshone-Bannock Tribes did not provide the lead-in paragraph, only the following strategies.)

- Implement research, monitoring and programmatic evaluation as a major objective of the fish and wildlife program, based on the framework concept and structure developed for this program. Focus monitoring and evaluation efforts to determine the extent to which actions achieve biological objectives and visions at the subbasin, province and basin levels. (The Fish and Wildlife Service added that this work be accomplished by a Collaborative Analytical Process (CAP) workgroup, funded through the Council framework program.)
- Develop and include new metrics that permit monitoring and evaluation of river conditions and ecosystem functions identified in the biological objectives and in the list of habitat attributes and ecosystem characteristics that are part of the scientific foundation.
- Monitor and evaluate the levels of productivity, abundance, life history diversity and structural complexity of a representative set of populations of the focal species identified in the program (chinook salmon, steelhead, bull trout, black bear, beaver, bald eagle) at all life stages.
- Develop measures of the spatial diversity of local populations and life history types within watersheds. Restoration of extinct life history patterns will probably be an early indication of restoration of environmental conditions and ecological functions and indicate progress toward redevelopment of resilient population and meta-population structures.
- Identify healthy core and satellite populations throughout the region. To facilitate the design, implementation and evaluation of a monitoring program, the organization of the fish and wildlife program is based on a presumed meta-population structure so that a meta-population is not split among two or more provinces. Monitoring and evaluation efforts should similarly be organized to test this and recognize population structure.
- Identify and evaluate the extent of protection and re-establishment of key physical linkages connecting the habitats of populations, connecting local populations to each other, and connecting

the habitats of possible core population areas and between core and satellite populations to facilitate dispersal.

- Encourage an explicit statement of current beliefs that affect monitoring and evaluation programs; allow for rigorous examination of evidence for beliefs, framing of alternative hypotheses, and design of monitoring and evaluation to fairly test all reasonable hypotheses, through basic data collection and/or conduct of monitoring experiments.

Finding: For this stage of the program revision process the Council adopted more general strategies for research, monitoring and evaluation than proposed in the Strawman and recommended here. The strategies in the program emphasize linking monitoring and evaluation at the subbasin, province and basin levels to the use of biological objectives for population performance and environmental characteristics at those levels, consistent with these recommendations. Sections III.C.2, C.4, III.D.9, IV.B, V.A.5. The recommendations regarding explicit statements and rigorous evaluation of hypotheses and beliefs are reflected in these sections of the program and in the general policy and underlying scientific principle to undertake management actions in an adaptive, experimental manner. Sections III.A.2 (fourth planning assumption), B.2 (Principle 7). The program then calls for development of both a basinwide research plan and a program-level monitoring and evaluation plan, in collaboration with the fish and wildlife agencies and tribes, independent scientists, and others relevant entities. Section III.D.9. The more specific recommendations here can be considered in the development of those plans.

Source:	Montana Fish, Wildlife and Parks
Recommendation No.	31
Source:	Colville Confederated Tribes
Recommendation No.	33
Source:	Shoshone-Bannock Tribes
Recommendation No.	38

Recommendation: Montana and the Colville and Shoshone-Bannock Tribes recommended in addition that policies dealing with research, monitoring and evaluation should focus on:

- Identification of management questions needing research (critical uncertainties);
- Setting performance indicators and standards for evaluating program effectiveness; and,
- Facilitating communication among scientists regarding effective monitoring tools and regional data management needs.
- The Council/ISRP grants program for “innovative” research should address the above bullets. (The Shoshone-Bannock Tribes did not include this last provision.)

Finding: The Council adopted provisions consistent with these recommendations. The Council called for the development of a research plan to identify and address the key uncertainties for the program, coordinated with the research elements of the mainstem and subbasin management plans. Section III.D.9. And the Council called for the development of biological objectives (comparable to the performance indicators and standards recommended) at all program levels as the basis for evaluating program effectiveness. Sections III.C.2, C.4, III.D.9, IV.B, V.A.5. The Council did not specifically refer to facilitating communication among scientists; the Council did adopt provisions that call for open access for all to research and evaluation results, monitoring data and so forth. Section III.D.9. All projects funded for research, monitoring and evaluation should be consistent with the program strategies, which would include any “innovative” research solicitation.

Source:	Spokane Tribe
Recommendation No.	28
Source:	Colville Confederated Tribes
Recommendation No.	33
Source:	Burns-Paiute Tribe
Recommendation No.	34
Source:	Shoshone-Bannock Tribes
Recommendation No.	38
Source:	Coeur d'Alene Tribe
Recommendation No.	42
Source:	Washington Department of Fish and Wildlife
Recommendation No.	43
Source:	Kalispel Tribe
Recommendation No.	48
Source:	Kootenai Tribe
Recommendation No.	50

Recommendation: These tribes and Washington recommended various versions of the following additional provisions for research, monitoring and evaluation:

The Council program should continue to advocate the adaptive management concept to implement its activities, complete with monitoring and evaluation. The policy on identification of questions whose answers would improve fish and wildlife management or “critical uncertainties” is important as a basis for prioritizing research. The purpose of this policy is to provide a mechanism to focus research on important questions and to screen research proposals. While there are many interesting and potentially valuable research possibilities in the Columbia Basin, it is not the responsibility of Bonneville to fund them all, nor is it prudent to utilize a large proportion of the direct program funds to complete research at the expense of on-the-ground projects that meet identified objectives.

Finding: The Council adopted provisions consistent with this recommendation. *See* Sections III.A.2 (fourth planning assumption), B.2 (Principle 7), D.9. The Council agrees that the use of Bonneville direct funds for research needs to be carefully considered; development of the research plan is the long-term key to setting priorities for the allocation of Bonneville funds to research.

Source:	Colville Confederated Tribes
Recommendation No.	33
Source:	Burns-Paiute Tribe
Recommendation No.	34
Source:	Shoshone-Bannock Tribes
Recommendation No.	38
Source:	Washington Department of Fish and Wildlife
Recommendation No.	43

Recommendation: Washington and the three tribes recommended various versions of the following research standards:

At present, there are four broad management questions that could benefit from further Bonneville-funded research. The program should incorporate these current research priorities and a process for amendment of priorities.

- What are the most effective approaches, methods, or tools to improve the survival of juvenile and adult migrant fish in the mainstem Columbia and Snake Rivers?
- How can artificial production facilities be used to increase the numbers of adult fish with minimal harm to locally adapted populations?
- What habitat restoration methods are most effective in increasing populations of fish and wildlife?
- What are the most appropriate methods, suite of methods, to analyze efforts to increase fish and wildlife and estimate the benefits of those efforts?

The Colville Tribes added a fifth:

- What are the most effective approaches, methods, or tools to re-introduce anadromous fish into areas currently blocked by federal hydropower projects?

All but Washington also recommended some version of the following:

In order to focus research to efficiently address these questions, the program shall establish a group to develop a plan identifying the subsidiary research questions and possible methods to address them for each of the management questions above. The Council shall appoint three members of the group, fish and wildlife managers shall appoint three members and these six members shall choose a seventh member. (The last sentence was not in the recommendation provided by the Shoshone-Bannock Tribes.)

The resulting research plans will be submitted to the Council as a proposed amendment to the program. Research projects that are consistent with the plans will receive priority for Bonneville fish and wildlife funds over other research.

The Council/ISRP grants program for “innovative” research should be incorporated into the research decision making process outlined above. Innovative research funded by Bonneville under the Act should address aspects of important management questions through the research plan called for above. The Colville Tribes added that the “innovative” research program should consume no more than two percent of the direct program expenditures.

Finding: The Council adopted provision generally consistent with these recommendations, although the Council did not adopt or reject the recommendations for the specific key questions to be addressed in research under the program. At this stage in the program revision process, the Council stated an intent to establish a basinwide research plan, similar to the subbasin plans, which will identify key uncertainties for the program and its biological objectives and the steps needed to resolve those uncertainties. The plan is to identify major research topics, including ocean research, and establish priorities for research funding. The research plan should be developed with consideration for the vision, objectives and strategies in the program and is to be coordinated with the research elements of the mainstem plan and the subbasin plans. The process for developing the plan and associated budgets will ensure independent scientific review, input from fish and wildlife agencies and tribes, independent scientists, and other interested parties in the region. Section III.D.9.

The development of the research plan is the place to consider the recommendations for specific research questions. The role of an “innovative” research solicitation could also be considered in the development of the research plan. Finally, the Council concluded that final determination of a budget and

consideration of programmatic statements about specific budget allocation priorities should follow development of the subbasin and research plans. See Section VI.A.4.

Source: Columbia River Inter-Tribal Fish Commission
Recommendation No. 40

Recommendation: The Commission recommended an integrated approach to program coordination, information management, monitoring and evaluation, which is summarized below with other recommendations on coordination and information management. The Commission also recommended specific monitoring and evaluation and research strategies at various places in its extensive set of recommendations, many of which are summarized here:

- Incorporate 24-hour video fish counting into hydrosystem operations and management.
- Closely and continuously monitor tributary production and escapement to improve management.
- Monitor effectiveness of newly adopted abundance-based management for North Pacific ocean fisheries in reducing direct and indirect (incidental) fishing mortality on Columbia Basin salmon.
- Ensure that incidental salmon mortality (bycatch on non-targeted species) in other North Pacific and Bering Sea fisheries is accounted for and minimized through strict monitoring and adaptive management.
- Continue monitoring and evaluation of wildlife populations to determine success of enhancement and maintenance of habitat values.

Habitat monitoring:

- Monitoring reports must represent a meaningful cross-section of key salmon habitat, address the parameters of significance to productivity as listed herein, and provide trend data that allows evaluation of long-term improvements.
- Use a screening process as a framework for establishing minimum monitoring requirements for habitat evaluation. If insufficient data exist, activities should be deferred or curtailed until data on conditions set as standards are collected and summarized. If habitat evaluation indicates that habitat conditions do not meet biologically-based standards known to be essential for high salmon survival, do not undertake actions known to lead to worsening of these conditions. For an inventory of key linkages between land use actions, habitat conditions, and biological response see Rhodes et al. (1994) at Table 1. This response is needed because the prevailing dysfunctional management cycle in land management tends to: (1) recognize that salmon are heading for extinction and that habitat conditions are bad and declining or bad and static, (2) recommend continued use of a conventional BMP or a slight modification of an existing BMP, (3) assume that over a very long time frame that conditions will improve, thus requesting that something like 20 years be given to allow monitoring to demonstrate an improving trend and prove that the incremental change in management was effective, (4) rely on adaptive management totally, despite the fact that the large lag effects between action and response ensure a delay time that can exceed the time to extirpation of the stock, (5) allow so small an incremental change in management response to exceeding habitat standards and so limited a spatial scale of application that a monitoring program could not determine whether the management program was effective, leading to a conclusion that maybe just more time is required or that the stream has a new baseline (capacity shift) or that it was just a stream that never could have met standards anyway, (6) assume that any proposed management action will have no significant effect taken alone if it cannot be shown statistically ($p < 0.01$) to cause a change in habitat conditions, (7) do not systematically account for cumulative effects, and (8) get funding from the fish and wildlife

program to conduct habitat restoration at the same time that habitat degradation continues so that the net result is a reduction in the rate of overall habitat loss.

Water quality monitoring

- The network of water quality monitoring stations in the Snake and lower Columbia rivers should include, at a minimum, capability for monitoring water temperature in three dimensions (cross-section, with depth, and longitudinally) in each reservoir and total dissolved gases. After Council review, fund the water quality monitoring network.
- By January 2001 with consultation and approval of fish managers, fund a comprehensive assessment of all existing and planned dredging activities in the Columbia and Snake River mainstems. This report should include biological effects of proposed dredging of the lower Columbia River and cumulative effects of all dredging activities throughout the mainstem, including changes to dredge spoil islands.
- Develop a study plan to compile and evaluate existing water quality information, identify data gaps and priority problems, and recommend proposals to address gaps and priority problems. The project should include analysis of point sources, non-point sources, dioxin pollution, transboundary pollution, sewage in metropolitan areas and cumulative effects. Complete study plan and submit to the Council by September 30, 2001. After Council approval of the study plan, the Environmental Protection Agency, the Council and other relevant entities should secure funding through appropriate sources to implement the study plan.
- Coordinate development of a study plan to compile and evaluate existing water quality information, identify data gaps and priority problems, and recommend proposals to address gaps and priority problems. Use a cooperative approach, through the coordinating mechanism described above, including participation by all relevant entities such as Bonneville, Corps of Engineers, Federal Energy Regulatory Commission, Bureau of Reclamation, fish managers, state water quality agencies, state water resource agencies, tribal agencies, land management agencies, U.S. Geological Survey, Council and others. Coordinate with the Lower Columbia River Estuary Program as well as other appropriate studies and programs. After Council approval of the study plan, the Environmental Protection Agency, the Council and other relevant entities should secure funding through appropriate sources to implement the study plan.
- Develop and implement a long-term plan for monitoring pollution levels in water and fish.
- Identify fish sampling needs and analyze fish tissue.
- Assess water quality issues for potential effects on fish and wildlife health.
- Address tribal health issues (social, cultural, economic, physical, etc.) associated with water quality issues.

Water quality research

Devote research attention to a variety of water quality issues, such as

- Contraction of available rearing habitats and loss of productivity due to cumulative and watershed-wide effects of stream heating.
- Level of food availability in streams affected by stream heating and consequent effects on salmon growth rates.
- Reversal or inhibition of smoltification due to alterations in stream temperatures.
- Effect of tributary heating due to anthropogenic effects on the heat budget of the mainstem Columbia and Snake Rivers.
- Influence of temperature on warmwater diseases of salmonids, infection rates, delayed mortality rates in the mainstem and ocean.
- Influence of multiple exposure to daily temperature maxima on survival.
- Influence of exposure of pre-spawning adults to high holding or migration temperatures; impacts on gamete viability at various points in the pre-spawning phase.

- Loss in productivity in the spawning period due to inhibited migration rates caused by thermal blockages; inhibition in reaching spawning grounds, limited time to find mates, bioenergetic limitations to completing spawning.
- Conduct research to determine the level of biological sensitivity to various pollutants.

Basin-wide monitoring and assessment

- It should be a responsibility of CBFWA to conduct or assemble from information and reports available a comprehensive status review of the environmental, biological, social, and legal condition in the Columbia Basin. This report would be based upon data and reports made available by the basin's management agencies and in cooperation with the governors of each state. Resource data management would be facilitated by StreamNet with the cooperation of each state's GIS center. Data to be considered would include monitoring data (condition and trends, implementation, effectiveness, validation) and summaries provided by land management agencies (e.g., USFS, BLM, BOR, NRCS); water quality status of the rivers compiled by USEPA and each state's DEQ/DNR; water quantity status and future projections of availability provided by each state's Water Resources Department; the current status, future prospects, and needs in environmental laws to effectuate needed changes in environmental quality (including salmon habitat) relative to water law (water rights, conservation, instream flows) provided by each state's attorney general. If needed data are not willingly provided by any party, seek assistance from the Council and make known any needs for funding to conduct special audits or investigations. Report on conclusions to the Council on an annual basis. Make data and summaries available to provincial/subbasin planning process so that priority actions and adaptive management can be more effectively taken.

Land management monitoring, evaluation and reports

- The annual USFS report (from 1994 program, section 7.8A.6) should be in the form of data, analysis, and summaries produced from monitoring programs that are comprehensive in terms of geographic coverage and habitat parameters measured.
- The Natural Resources Conservation Service should summarize data available on geographic distribution and amount of sediment delivery to streams from agricultural land. In addition, compile data on geographic distribution of application of all toxic substances on agricultural lands (pesticides, herbicides) for comparison with local accumulations of such toxins in stream sediments and fish tissue.
- *Best Management Practices*: BMP effectiveness remains a matter of speculation. Most studies of the effects of BMPs have been too short in duration to capture lagged effects or provide an indication of long-term effects. Little is known about the cumulative effectiveness of BMPs in the face of significant landscape alteration. While many assessments of BMPs have focused on estimating the short-term reduction in accelerated pollutant loading, most studies have not examined whether aquatic habitat is fully protected over the long term.
 - Evaluate effectiveness of BMPs in achieving habitat objectives, considering their cumulative application on a watershed basis and their application over time (long-term performance) under various geologic, geomorphic, vegetational, and climatic environments.
 - Review and/or establish best management practices under the Clean Water Act to maintain and improve salmon and steelhead production. Justify use of BMPs through use of case histories and monitoring data having sufficient pre- and post-application condition and trend information.

Research on wild and naturally spawning populations

- Data collection should be more closely tied to the NMFS status reviews. The status reviews identify several populations where data is lacking. Data collections should be funded to allow

these data to be gathered. Additional data should be collected on other anadromous fish populations as well.

Finding: The Council did not adopt or reject these specific recommendations for monitoring and evaluation and research initiatives. Again, in this phase of the program amendment process the Council decided on a consistent and fairly general level of detail for the basinwide strategies, including research, monitoring and evaluation strategies described above in response to the other recommendations. Nothing in the recommendation summarized here is necessarily inconsistent with the more general standards adopted by the Council. Detailed research, monitoring and evaluation tasks such as recommended here will appropriate subjects for the development of the separate mainstem and research plans, the program or basin-level monitoring and evaluation program, and subbasin plans. Sections III.D.6, III.D.9.

Source: Bonneville Power Administration
Recommendation No. 37

Recommendation: Bonneville noted that as the entity primarily responsible for implementing the program, it must know whether mitigation actions produce results. There is no comprehensive monitoring and evaluation covering federal and non-federal habitat initiatives from a basin-wide perspective. No single agency has the budget or responsibility to approach the job comprehensively. Accordingly, Bonneville recommends that all entities with responsibility for habitat mitigation and protection pool their resources to fund an independent entity with scientific expertise to develop, by May 1, 2001, a uniform template that standardizes what data are needed, where, on what collection schedule, the scales of measurement, and how data should be analyzed. This independent entity would convene scientists and resource managers to review and adopt the template. Once adopted, the Council should require use of the template for habitat projects implemented under the program.

Monitoring and evaluation includes measurement of the biological benefits. To be more properly aligned with the scientific method, monitoring and evaluation should be directed toward proving or disproving null hypotheses. Bonneville will use monitoring and evaluation results as the basis upon which it will encourage or discourage continued funding for a particular measure in its discussions with the Council and project proponent.

Finding: The Council adopted general strategies for research, monitoring and evaluation consistent with the substance of this recommendation. The strategies in the program emphasize linking monitoring and evaluation at the subbasin, province and basin levels to the use of biological objectives for population performance and environmental characteristics at those levels, consistent with these recommendations. Sections III.C.2, C.4, III.D.9, IV.B, V.A.5. As noted above, if implemented, the result could indeed be a comprehensive monitoring and evaluation program for fish and wildlife in the Columbia River basin, incorporating efforts on both federal and non-federal lands. The goal would be to evaluate progress across the basin in improving habitat conditions and biological performance.

The recommendation concerning the use of scientific method and evaluation of hypotheses is reflected in the sections noted above and especially in the general policy and underlying scientific principle calling for management actions to be undertaken in an adaptive, experimental manner. Sections III.A.2 (fourth planning assumption), B.2 (Principle 7).

The program calls for further development of both a basinwide research plan and a program-level monitoring and evaluation program, in collaboration with the fish and wildlife agencies and tribes and other interested parties. Development of the research plan is to be coordinated with the research elements

of the mainstem plan and the subbasin plans, and developed in such a way as to ensure independent scientific review, input from fish and wildlife agencies and tribes, independent scientists, and other interested parties in the region. At the same time, the Council stated a general commitment to identify data and data management needs and help improve the dissemination of and access to data. Section III.D.9. The Council did not specify a procedure for accomplishing these tasks and integrating all of the responsible entities in the basin in as much detail or precisely as Bonneville recommended. The recommended procedures will be considered as the Council begins its efforts to implement these strategies.

Source: Columbia River Alliance
Recommendation No. 39

Recommendation: The Columbia River Alliance recommended the following specific research and evaluation tasks:

- Prioritize research funding to document project-specific effects on anadromous fish, and effects of operational changes. Quantify the benefits and costs of existing and proposed measures to protect Columbia Basin salmon and steelhead populations, taking account of adverse impacts and costs to other species of interest, if any. Make decisions based on best available quantification of effects of operational changes.
- Improve measurements of survival through all salmonid life stages to identify high mortality areas and reduce mortality. Use new and existing information to expand salmon passage models to cover entire salmon lifecycle. Without a model of effects on adults from flow and spill changes, managers cannot make a rational assessment of the effects of operational changes.
- Use and improve computer models to assemble existing data and relationships to predict effects on salmon and steelhead from management actions.
- Use computer metapopulation models to predict extinction probabilities for listed stocks, and annually reassess extinction probabilities to reconsider listing decisions. Use new and existing information to construct metapopulation models of salmon and steelhead population dynamics. Preliminary information suggests that extinction risks are much lower than generally supposed, which if confirmed could remove ESA listings and eliminate significant management constraints.

Mainstem

- Focus research efforts on identification of survival through alternate passage methods at dams to reduce “hot spots” for mortality (*e.g.*, excessive spill at The Dalles).
- Assess natural mortality levels to gain understanding of when human-induced hydrosystem and other effects are fully mitigated.

Finding: The Council did not adopt or reject these specific recommendations for evaluation and research initiatives. Again, in this phase of the program amendment process the Council decided on a consistent and fairly general level of detail for the basinwide strategies, including research, monitoring and evaluation strategies described above in response to the other recommendations. Detailed research and evaluation tasks such as recommended here will appropriate subjects for the development of the separate mainstem and research plans and the program or basin-level monitoring and evaluation program. Sections III.D.6, III.D.9.

Source: Northwest Irrigation Utilities, Columbia-Snake River Irrigators Association, Eastern Oregon Irrigators Association
Recommendation No. 25

Recommendation: The measure of returning adult fish must take into account changing inland climate and ocean conditions, as well as any other direct habitat measures that could be taken to improve fish runs. This means that adequate monitoring and evaluation must be undertaken to ensure that measurable fish benefits are verified.

Finding: The Council adopted provisions on monitoring and evaluation and consideration of ocean conditions consistent with this recommendation. Sections III.A.2 (eighth planning assumption), III.B.2 (Principles 1 and 4), III.C.2, III.C.2.b and Appendix D (ninth objective), III.C.4, III.D.8, III.D.9, IV.C.

Source: Inland Ports Navigation Group
Recommendation No. 49

Recommendation: The Council should play a key role in efforts to expand what we know about the rest of the Hs, so that the database is equal to that already compiled about hydro. The Council should particularly endorse research regarding the impact of climate change, ocean temperature, and decadal regional climate shifts. The Council, as well as Bonneville, should lead in putting before the people sound science, best cost estimates, and other data showing the risks in spending money on recovery efforts elsewhere in the life cycle when ocean changes can erase them. We need such data, and Bonneville is a well-positioned federal agency to fund and oversee and report on such efforts. Scientists must use a time frame to evaluate fish runs that goes back far enough to encompass the last decade-or-longer “rainy cycle” that many climate experts say we now have re-entered. Fish researchers must not be allowed to narrow their research period to the cyclical dry decade or so from which the region appears to be shifting. The Council should not fund projects that incorporate recent, short time frames from which to interpret species recovery options.

A Council project is needed to assess the adverse short- and medium-term damage that would be done to listed species by sediment, particularly in Lake Wallula, if the Snake River dams were breached. We also support more research into the “delayed mortality” concept, which allows critics of transportation to claim adverse effects for juvenile transportation that are not merited by current research.

Finding: With regard to evaluation of effect of ocean conditions and climate shifts, *see* the finding responding to the previous recommendation. The specific recommendations for research related to mainstem operations and system configuration are appropriate subjects for the development of the mainstem and research plans. Sections III.D.6, D.9.

Source: Sidney Clouston
Recommendation No. 8

Recommendation: Monitoring and evaluation should begin before a project starts by the gathering of baseline data, then continue to gather data showing whether the projects are proceeding as planned and achieving measurable benefits. The quality of the fish habitat is affected by the health of the riparian zones and projects that are designed to improve habitat needs to be monitored and those results

evaluated. The biological carrying capacity of the environment is measurable. The health of the forest buffer and other riparian zones can be monitored and evaluated by photos.

Finding: The Council adopted monitoring and evaluation strategies generally consistent with the recommendation to incorporate evaluation of baseline information and objectives into project management. Section III.D.9. The Council did not adopt or reject the recommendations for specific habitat conditions to monitor and evaluate. Because of the program's focus on habitat protection and restoration, monitoring and evaluation of the projects and the program as a whole will end likely up focusing at least in part on these kinds of habitat characteristics.

Source: Bill Bosch
Recommendation No. 3

Recommendation: Redirect the fisheries research engine. Although a lot of attention is paid to any conflicting results offered by the scientists, we cannot ignore the fact that most, if not all, of the science points to one main answer: If we want more fish, we need to let the river be more of a river, not a system of reservoirs. We don't need more research directed at refining sources of fish-related mortality and determining how to alter the fishes' natural behavior to better accommodate our human needs. The majority of this research (people and dollars) should be redirected to tell us humans how to get what we need from a river that is allowed to be a river -- e.g., How do we replace the clean energy, irrigation water, and transportation benefits supplied by the hydropower system? What about research directed toward radically improving our agricultural water needs?

Finding: The Council did not adopt or reject this recommendation for what should be the specific research tasks of the basinwide research plan under the program. Section III.D.9. The points raised here will be appropriate subjects to consider at the time that plan is developed and considered for adoption into the program, consistent with the policies, objectives and strategies in the program.

3(c)(x) Strategies regarding data management/analytical methods/technical coordination/independent science panels

Source: Washington Department of Fish and Wildlife
Recommendation No. 43

Recommendation: A central issue for the wide array of natural resource managers in the Columbia Basin is that of conducting and providing long-term support for the comprehensive integration of information on anadromous fish, resident fish, and wildlife, and the habitats on which they depend. We recommend the program include a data management policy that supports the ecosystem-based vision for the program. Such a policy will provide a unifying structure to the ever-growing body of information, and provide a context for the desired scientific rigor and standards of that body.

Finding: The Council adopted provisions consistent with the substance of this recommendation. The program's ecosystem vision is to be accomplished by protecting and restoring the natural ecological functions and habitats of the Columbia River basin wherever feasible, integrating multiple species in a habitat-based approach. Biological objectives for population and environmental characteristics describe the kinds of changes needed to realize the vision, and the objectives then provide the basis for monitoring and evaluating the success of the program at the project, subbasin, province and basin levels. Sections III.C.2, C.4, III.D.9, IV.B, V.A.5. The monitoring and evaluation and data management provisions are intended by the Council to support this overall approach.

Source: Oregon Department of Fish and Wildlife
Recommendation No. 26

Recommendation: Oregon recommended that in developing and implementing strategies, apply the following standards on data management:

- All information collected on fish and wildlife and their habitats in the Columbia River basin should be made freely accessible to all parties.
- All information collected on fish and wildlife and their habitats in the Columbia River basin should adhere to a set of common protocols and standards.

Finding: The Council adopted strategies consistent with this recommendation, calling for open access to research and monitoring and evaluation information and for the use of consistent methods and protocols for collecting and reporting information. Section III.D.9.

Source: Oregon Department of Fish and Wildlife
Recommendation No. 26

Source: U.S. Fish and Wildlife Service
Recommendation No. 46

Recommendation: Oregon recommended that in developing and implementing strategies, apply the following standards on analysis:

- An analytical scientific framework should be collaboratively developed by federal, state and tribal scientists and with the help of experts from other institutions as needed. The framework should quantitatively tie the goals and objectives of the program to its measures. The analytical

framework should also identify information needs to determine whether and how well actions are achieving the biological objectives of the program. The analytical framework should be developed collaboratively because the broad geographic scope of the Council's program and the diversity of analytical approaches used in the region requires a wide range of expertise and scientific perspective that does not reside in any single entity.

- A collaborative analytical process should be established to provide an explicit quantitative link between program objectives and strategies established at the basin, province, and subbasin level. Analyses should:
 - a. evaluate the likelihood of meeting objectives under alternative management programs and thus aid in project selection,
 - b. provide a basis for designing experimental management programs that address objectives and maximize learning, and
 - c. inform the design of research, monitoring and evaluation.Analyses should be completed collaboratively because the broad geographic scope of the Council's program and the diversity of analytical approaches used in the region requires a wide range of expertise and scientific perspective that does not reside in any single entity.

The Fish and Wildlife Service provided a similar recommendation, recommending a collaborative process for development of the analytical basis for subbasin assessment and planning under what it called the longer term Analytical Coordinated Team (ACT)/Collaborative Analytical Process (CAP).

Finding: The Council adopted strategies for monitoring and evaluation and assessments and analysis consistent with the underlying substance of these recommendations, if much more general. The Council's basic strategy emphasizes linking monitoring and evaluation at the subbasin, province and basin levels to the use of biological objectives for population performance and environmental characteristics at each of those levels. Sections III.C.2, C.4, III.D.9, IV.B, V.A.5. The Council then provides that it will work collaboratively with other relevant entities in the basin to develop a program-level monitoring and evaluation program to implement this general strategy. Section III.D.9. The program also describes the basic purpose and elements of subbasin assessments, and notes that what information will be gathered and how it will be analyzed for the assessments has been and will continue to be part of a regional collaborative effort. Section V.A.3

The Council did not write into the program any particular analytical approach or model, including the Ecosystem Diagnosis and Treatment (EDT) model or the specific Collaborative Analytical Process described here. Instead, the Council has established a Regional Assessment Advisory Committee to assist the Council in implementing these strategies. The Council did not adopt or reject the specific detail recommended here for how that collaborative effort would occur or specify any particular analytical method or process. These are details to be worked out on an on-going basis as the Council proceeds to specific subbasin and mainstem planning and project development and review consistent with this more specific planning.

Source: National Marine Fisheries Service
Recommendation No. 54

Recommendation: The National Marine Fisheries Service recommended:

- Work with the federal and state agencies and tribes to create a seamless process for storing and disseminating data. Overall planning and implementation at province, sub-basin, watershed and

farm level would benefit from a more coordinated, seamless system for storing and disseminating data, information and technology.

- Establish an integrated, collaborative analytical process. Analytical frameworks and experimental management options for listed species need to be developed; monitoring and evaluation programs need to be established; and data collection needs to be standardized, integrated, and managed effectively. There are a variety of analytical tools that have been or are in development to project extinction risks and the effects of alternative management actions on populations of interest. These tools include the EDT, CRI, PATH, H-VSP and CART methods. It is essential that the continued development and application of these tools occurs within an integrated analytical framework. A piecemeal approach to analyses would impede progress toward learning about effective management alternatives and would be inefficient and ineffective.
- NMFS understands that the Council has obligations to protect, mitigate and enhance resident fish and wildlife species as well as anadromous species. To this end, the Council should consider inter-related core analytical groups for resident fish, wildlife and anadromous fish. The NMFS Science Center has offered to chair or co-chair the core anadromous fish group. This role recognizes the fact that an important purpose of the process would be to support ESA decisionmaking.

Finding: The Council adopted provisions consistent with this recommendation. The program calls for the development of an integrated monitoring and evaluation program that encompasses activities and objectives at all levels of the program, from the collection and posting of project data to subbasin, province and basin-level monitoring and assessment. The program also calls for the Council to work with others for the establishment of and open access to an Internet-based system for the dissemination of data and research results from the network of data sites linked to the program. Section III.D.9. With regard to the recommendation for a collaborative, inter-related analytical process and teams, *see* the finding immediately above. The program recognizes that one goal of subbasin assessment and planning is to integrate into the program's systemwide, multi-species concerns the ESA recovery planning and other decisionmaking for those listed species affected by the hydrosystem. Section V.A.3, A.5. Thus it will make sense to do what we can to link or collaborate on the analytical processes.

Source:	Colville Confederated Tribes
Recommendation No.	33
Source:	Burns-Paiute Tribe
Recommendation No.	34
Source:	Shoshone-Bannock Tribes
Recommendation No.	38
Source:	Washington Department of Fish and Wildlife
Recommendation No.	43
Source:	U.S. Fish and Wildlife Service
Recommendation No.	46

Recommendation: These fish and wildlife agencies and tribes recommended overlapping sets of standards and strategies for data management and technical coordination, as follows:

Standards and strategies for achieving technical coordination (not in the Colville or Burns-Paiute Tribes' recommendations)

- Establish an electronic library accessible through the Internet. The library will include electronic copies of all annual and final reports of projects funded under the fish and wildlife program, an

electronic catalog of material relevant to fish and wildlife restoration in the Columbia Basin, and methods of requesting and delivering material not in electronic format.

- Conduct an annual symposium, with proceedings, on the progress of restoration efforts in the Columbia Basin.

Standards for data management

- All information collected as part of this program should be made freely accessible to all parties. (This was not in the Shoshone-Bannock Tribes' recommendation.)
- Information identified as necessary for key monitoring and evaluation needs will be reported by parties at specified regular intervals. (This was not in the Shoshone-Bannock Tribes' recommendation.)
- Resource management entities should maintain existing research and monitoring programs not funded by the fish and wildlife program at their current levels and will conform those programs to applicable standards established under this program. (Only in the Fish and Wildlife Service and Burns-Paiute Tribe's recommendations.)
- Each party conducting projects funded by Bonneville will follow information collection and management standards to be developed. All data collected by entities funded under this program shall include appropriated geospatial locators (e.g. GPS coordinates, LLID). (Only in the Washington, Colville Tribes and Burns-Paiute Tribe's recommendations. The Burns-Paiute Tribe recommended that the information collection and management standards be developed by the Science Institute separately recommended by them and others.)
- The Science Institute or other appropriate body will annually prioritize anticipated information needs. (Only in the Burns-Paiute Tribe's recommendation.)

Standards for evaluation and data analysis (not in the Colville or Burns-Paiute Tribes' recommendation)

Critical technical activities necessary to successfully restore fish and wildlife resources in the Columbia Basin (e.g. research, monitoring, evaluation, information management, and associated technical analyses) are fragmented among many entities. Multiple state (departments of fish and wildlife, ecology, forestry, agriculture, etc.), federal (NMFS, USFS, BLM, DOE, Bonneville, USDA, NRCS, etc.), and tribal (CRITFC, individual tribal programs) organizations collect and manage critical information and undertake actions which affect the quality of the fish and wildlife ecosystem.

The Council has undertaken a subbasin planning process which brings these groups together to develop coordinated plans of action at the subbasin level. Subbasins, however, do not function in isolation, but are part of the larger salmon ecosystem encompassing the entire Columbia River Basin and the Northeast Pacific Ocean. At this time, mechanisms to coordinate multi-agency actions at this larger spatial scale are inadequate or entirely missing.

The Columbia Basin federal, tribal, and state fish and wildlife managers and the Council share a common vision of restoring sustainable naturally producing fish and wildlife populations of the Columbia River ecosystem. To achieve this vision the fish and wildlife managers and the Council will form a collaborative technical team to jointly develop those technical parts of the program necessary to integrate subbasin plans into an effective overall program. Examples of these collaborative activities include, but are not limited to:

- Design and coordination of research and monitoring projects to resolve uncertainties and measure progress toward provincial and regional goals and objectives;
- Assessing the potential consequences of different management options;

- Evaluating hypotheses relating to fish and wildlife population response to management actions using a variety of analytic tools;
- Oversight of information management activities, including developing standards for collection methods and reporting requirements, to insure the greatest possible level of comparability across subbasins and regional access;
- Developing periodic reports describing progress toward provincial and regional goals and objectives;
- Providing technical services as needed in support of subbasin planning and implementation.

The Colville Tribes concluded that the effective dissemination of information among the fish and wildlife managers, operators, policy and decisionmakers and the public is critical to the success of the Council's fish and wildlife program.

Finding: The Council adopted provisions consistent with the substance of these recommendations, if far more general. The Council adopted the recommendations to require projects funded by Bonneville to collect and report data following consistent guidelines to be approved by the Council, to make all data and information related to this program as open and accessible as possible, and to establish an Internet-based system for access to data and information as part of that effort. The program also calls for the Council to initiate a process to identify data needs in the basin, survey available data and fill any data gaps. The Council did not specify precisely who will develop these data management standards or how they will be developed, leaving that for the Council to work out with the fish and wildlife managers and others in implementation. Finally, the Council also calls for the development, in collaboration with others, of a program-level monitoring and evaluation plan based in the program's framework of biological objectives at different levels and integrating the project and subbasin-level monitoring and evaluation data. Section III.D.9. Regarding the recommendations for collaborative efforts at analysis and technical coordination, see the findings above in response to the similar recommendations from Oregon and the Fish and Wildlife Service.

Source:	Spokane Tribe
Recommendation No.	28
Source:	Coeur d'Alene Tribe
Recommendation No.	42
Source:	Kalispel Tribe
Recommendation No.	48
Source:	Kootenai Tribe
Recommendation No.	50

Recommendation: Policies dealing with data management should focus on defining regional data management needs. Monitoring standards, data management needs and additional background on research, monitoring and evaluation are discussed in the draft CBFWA paper "Research, Monitoring, And Evaluation Guidelines For Restoring Fish And Wildlife Resources In The Columbia River Basin."

Finding: The Council adopted provisions consistent with these recommendations, as described above. Section III.D.9.

Source: Columbia River Inter-Tribal Fish Commission
Recommendation No. 40

Recommendation: The Commission recommended a substantial set of strategies regarding the coordination of information management, technical analysis and the organization and use of independent science panel, some of which overlap with recommendations discussed above:

Technical Coordination and Evaluation

The largest impediment to protecting, mitigating, and enhancing fish and wildlife resources is the lack of adequate technical expertise to design, implement, and evaluate effective strategies and measures. Critical technical activities necessary to successfully restore fish and wildlife resources in the Columbia Basin (e.g. research, monitoring, evaluation, information management, and associated technical analyses) are fragmented among many entities. Multiple state (departments of fish and wildlife, ecology, forestry, agriculture, etc.), federal (NMFS, USFS, BLM, DOE, Bonneville, USDA, NRCS, etc.), and tribal (CRITFC, individual tribal programs) organizations collect and manage critical information and undertake actions that affect the quality of the fish and wildlife ecosystem.

The Council has undertaken a subbasin planning process which brings these groups together to develop coordinated plans of action at the subbasin level. Subbasins, however, do not function in isolation, but are part of the larger salmon ecosystem encompassing the entire Columbia River Basin and the Northeast Pacific Ocean. At this time, mechanisms to coordinate multi-agency actions at this larger spatial scale are inadequate or entirely missing. The Columbia Basin federal, tribal, and state Fish and Wildlife Managers and the Northwest Power Planning Council share a common vision of restoring sustainable naturally producing fish and wildlife populations of the Columbia River ecosystem. To achieve this vision the Council should adopt the following standards and strategies to improve technical coordination:

Standards

- Technical efforts should stress collaboration between projects and agencies to use limited technical resources most effectively.
- When choices must be made, technical groups should objectively characterize realistic options and their consequences, rather than become advocates for a particular option.
- Technical groups should develop methods to communicate their results clearly to policy and public groups.

Strategies

- Establish a Columbia Basin Fish and Wildlife Science Institute as a venue for collaboration on technical issues. Such an organization would include a small administrative and technical staff to coordinate activities and be governed by a board of directors composed of tribal, state, and federal policy representatives. The board of directors would establish work priorities, schedules, and policies. The bulk of the Institute's work would be accomplished by scientists from academe, private and public research organizations, and management agencies who are assigned to the Institute for specific tasks and time periods. Rather than creating a new group of technical experts, the Institute should be a place where efforts are brought together. Such an Institute will:
 1. Incorporate and coordinate the present functions of the ISAB and ISRP.
 2. Identify existing research and monitoring activities and key needs to implement the multi-species framework. Base this work upon the reports "Research, Monitoring, And Evaluation Guidelines For Restoring Fish And Wildlife Resources In The Columbia River Basin" and "Planning Steps For The Research, Monitoring And Evaluation Modules Of The Regional Multi-Species Framework" prepared by agency and Council staffs, respectively;

3. Design and coordinate research and monitoring projects in collaboration with subbasin planners to resolve uncertainties and measure progress toward subbasin, provincial and regional goals and biological objectives;
 4. Encourage an explicit statement of current beliefs that affect monitoring and evaluation programs; allow for rigorous examination of evidence for beliefs, framing of alternative hypotheses, and design of research, monitoring, and evaluation to fairly test all reasonable hypotheses, through basic data collection and/or conduct of research and monitoring experiments
 5. Develop and implement, in collaboration with resource managers, standards and quality control procedures for data collection, management, and sharing;
 6. Develop and use methods to report progress in restoring fish and wildlife resources at the subbasin, province, and ecosystem levels to policy makers, stakeholders, and the general public;
 7. Designate representative index populations/subbasins of the focal species for intensive monitoring and research of their population structure, abundance, and life history characteristics;
 8. Provide technical services to support subbasin planners, including advice and coordination of research and monitoring needs, life-cycle analyses of the effects of subbasin actions, access and training as required to use modeling and GIS tools, and information management services.
 9. Develop and implement methods to coordinate and share research, monitoring, data management, and evaluation activities between all programs to protect, mitigate, and enhance fish and wildlife resources in the Columbia Basin.
 10. Provide a collaborative forum for coordinating and tracking research and evaluation efforts.
 11. Provide fellowships for the creation and development of advanced topics of relevance (e.g. write books, etc.)
 12. Affiliate with national centers of excellence in matters of resource sharing, use of analyses, media production, and review of contentious issues.
- The Independent Science Advisory Board will provide scientific advice to the Council, the National Marine Fisheries Service, and the Columbia Basin Indian Tribes. The ISAB will be overseen by a three member board composed of the Chairman of the Northwest Power Planning Council, the Regional Director of the National Marine Fisheries Service, and a policy representative of the 13 Columbia Basin Indian Tribes. The policy board will review the workplan of the ISAB and provide recommendations for the priorities of the ISAB and the Science Institute.
 - Establish an electronic library accessible through the Internet. The library will include electronic copies of all annual and final reports of projects funded under the fish and wildlife program, an electronic catalog of material relevant to fish and wildlife restoration in the Columbia Basin, and methods of requesting and delivering material not in electronic format.
 - Conduct an annual symposium, with proceedings, on the progress of restoration efforts in the Columbia Basin.

Coordination of Information Management

Information management under this program should be coordinated through the Scientific Institute described above. Information management includes all sources of knowledge. These include not only numerical information, often assembled in various databases, but also information in various written, graphical, and video formats, and knowledge transmitted verbally in a cultural context.

Issues surrounding information management can be described at three levels or tiers. The first tier involves the collection of information at the primary source. Most often this involves data collection through field research and monitoring activities. The issues might be described as adequacy (is all the

needed information being collected), consistency (is the information comparable across all areas of the basin), and quality control (does the information meet standards of documentation, accuracy, and precision).

The second tier of information management issues involves the daily management of the information itself. This involves the capture of information into a permanent format, management and storage of the information over the long term, and providing routine user access to the information. Presently the largest information repositories are the StreamNet databases, for numeric information, and the StreamNet Library, for written, and other types of information.

The third tier of information management issues involves the selection, compiling, and analysis of information to meet specific needs. Typically these activities are conducted as part of various program evaluation activities at the local, provincial, and basin levels. These issues might also be characterized as those involving in-depth and intense use of second-tier information. Often it may involve the use of masses of information to create a new database (e.g. updating stock-recruit or life table analyses), documents (e.g. a comprehensive literature survey of a topic or issue), or applications (e.g. new combinations of GIS information in a mapping project) which itself would be added to the second-tier information resources. These efforts require resources beyond those normally needed to manage second-tier information.

Standards

- Tier one information collected under the program should conform to standards for adequacy, consistency, and quality control developed by the Fish and Wildlife Science Institute.
- Each party conducting projects funded by the Bonneville should adopt and implement information collection and management standards, including geospatial location information, as developed by the Fish and Wildlife Science Institute for all projects in the Columbia basin.
- Resource management entities in the Columbia River Basin should maintain existing research and monitoring programs not funded by the fish and wildlife program at their current levels and will conform those programs to applicable standards established under this program.
- Information identified by the Fish and Wildlife Science Institute as necessary for key monitoring and evaluation needs should be reported by parties at specified regular intervals.
- All information collected as part of this program should adhere to a set of common standards for data exchange and dissemination to be developed.
- All information collected as part of this program should be made freely accessible to all parties.

Strategies

- The Fish and Wildlife Science Institute, in collaboration with resource managers, will develop standards for data collection and reporting. Resource managers will commit to these principles through an MOU (similar to that used by the Chesapeake Information Management System) and will implement them in all their Columbia Basin projects and programs.
- The present StreamNet project, working with the Fish and Wildlife Science Institute, will refocus its efforts at tier two information management issues.
- The Fish and Wildlife Science Institute, or other appropriate body, will annually prioritize anticipated information needs.
- The Fish and Wildlife Science Institute, working with subbasin planners and others, will annually coordinate tier three information management activities.

Finding: The Council adopted provisions on data collection and management, assessments, and monitoring and evaluation that are consistent with, if far more general than, the parts of this recommendation concerning what kinds of information need to be collected, how that information should

be collected and handled, the need to make the information freely accessible and connected to the Internet, and the links between data collection and management, monitoring and evaluation and assessments. Section III.D.9. These provisions are described in the findings on recommendations above, including the findings in response to recommendations from Oregon and the Fish and Wildlife Service, for collaborative efforts at analysis and technical coordination. The Council adopted just the very basic strategies for what needs to occur in the realm of data management, technical coordination and monitoring and evaluation above the project level. Detailed monitoring and evaluation and data management provisions have always been part of the program; the difficulty has always been implementing effective, efficient program-level monitoring and evaluation. The Commission will be a critical source for ideas and energy in developing further the monitoring and evaluation program and data management standards.

The Council adopted the recommendation to add a representative from the basin's Indian tribes to the policy oversight panel for the Independent Science Advisory Board. Section VI.B.2.b. The Council did not call for the establishment of the Science Institute. The Council is not yet persuaded that the value of the institute is worth the substantial commitment of money and people. This is a matter for continued discussion with the Commission and others as we develop the basinwide research plan and monitoring and evaluation program and continue the on-going oversight of the independent science panels.

Source: StreamNet -- Northwest Aquatic Information Network
Recommendation No. 53

Recommendation: In a paper titled "Data Management Issues for Consideration During the Council's Fish and Wildlife Program Amendment Process," StreamNet identified five issues or needs in relation to data management and analysis and summarized a set of specific recommendations on these matters as follows:

Issue 1: Need for regionally standardized data collection and data management

- The program should encourage Columbia basin agencies to work together to develop mutually agreed on standards for data collection methodology and data definitions for specific types of priority fisheries and wildlife data. CBFWA could take a lead role in this effort, and a series of workshops might be a productive approach.
- The program should require projects funded under the program to provide specifically defined kinds of fisheries and wildlife related data to the program in regionally standardized formats. Formats should be developed cooperatively among the agencies through workshops, and assistance with developing standardized formats can be obtained from the regional data management projects.
- The program should emphasize the continued value of the regional data management programs to acquire, standardize and disseminate data. The role of these projects should be reevaluated after regional standardization is achieved.

Issue 2: Need for regional priorities for data collection and availability

- The program should institute a process to work with entities in the basin to annually determine the top priority issues and problems that require attention. These priority issues would then be used to guide program funding decisions and to define the priority data needs to guide regional data management projects in what data should be acquired and made available.

Issue 3: Need to use new technology to improve data management effectiveness

- The program should require projects funded by the program to provide their raw and analyzed data, with metadata, in electronic format and have it posted on the Internet. Posting could be through the project's agency, a cooperating agency, or one of the regional data management projects.
- For data where standardized data formats have been established, the program should require data -to be posted in those formats.
- The program should encourage fish and wildlife agencies in the basin to begin posting and maintaining core data types on the web, either through the agency or through the regional data management projects. This should be done collaboratively through CBFWA.

Issue 4: Need to integrate data management and data analysis

- The program should encourage projects funded through the program to involve database management as an integral part of project development by requiring the issue to be addressed in project proposals.

Issue 5: Need for an electronic library/archive

- The program should emphasize and support the need to provide access to reports and other regionally significant scientific literature in paper and electronic form.

Strategies and standards for data management and analysis

- Cooperatively develop and adopt regional standards for data management (data definitions and formats) and quality control, and attempt to develop standards for data collection methodology, for specific types of priority fish and wildlife data that are commonly collected across the Columbia Basin for projects participating in the program.
- Cooperatively develop annual priorities of critical data and information needs. These should be based on identification and prioritization of the critical issues and problems that must be addressed in order to achieve program objectives. The priority issues could be used to guide program project funding decisions and to define the priority data needs to guide regional data management projects in what data would be acquired and made available.
- Make data and information developed through the program rapidly available to all by requiring projects funded by the program to provide their raw and analyzed data, with descriptive metadata, in electronic format and post them on the Internet.
- Projects funded through the program should involve database management specialists as an integral part of project development to maximize effective acquisition and management of needed data.
- Maintain an electronic library accessible through the Internet, to include electronic copies of annual and final reports of projects funded under the program, electronic copies of important historical reports and documents, references for data contained in the StreamNet database, an electronic catalog of material relevant to fish and wildlife restoration in the Columbia basin, and means of requesting and delivering material not in electronic format.
- Projects funded through the program will adhere to regionally adopted standards for collecting, managing and reporting data for specifically defined kinds of fisheries and wildlife related data.
- Projects funded through the program will include geospatial references (GPS coordinates, LLID, etc.) tied to their data.
- Projects funded through the program will rapidly provide their raw and analyzed data, with descriptive metadata, in electronic format and have it posted on the Internet. Where standardized data formats have been established, data will be posted in those formats. The regional data management projects can assist with Internet posting.

- Data management projects will use the annually developed regional priority data needs determinations to guide development and dissemination of new data sets.
- Databases of regionally relevant information will be maintained and updated regularly and made available to all parties in the basin.
- Projects requesting funding through program will describe their data management strategies in their project proposals.

Finding: The Council adopted provisions on data management that provide a basic outline of the Council's strategy for information management concerning the kinds of information that need to be collected, how that information should be collected and handled, the need to make the information freely accessible and connected to the Internet, and the links between data collection and management, monitoring and evaluation and assessment. Section III.D.9. These provisions are consistent with the recommendations of StreamNet, just far less detailed. The detail in the StreamNet recommendation will be important to consider as the Council works with others to implement these strategies.

Source: Montana Fish, Wildlife and Parks
Recommendation No. 31

Recommendation: Montana supported the recommendations on data management submitted by StreamNet, including the need for:

- Regionally standardized data collection and data management
- Regional priorities for data collection and availability
- The use of new technology to improve data management effectiveness
- Integration of data management and data analysis as part of project development
- An electronic library/archive to provide access to reports and other regionally significant scientific literature in paper and electronic form.

Finding: The Council adopted provisions consistent with this recommendation, as described above. Section III.D.9.

Source: Sidney Clouston
Recommendation No. 8

Recommendation: StreamNet is an excellent base system for coordination of information, but could be improved to be more inclusive of the general public. StreamNet should be developed in close cooperation with not just fishery managers, but also other federal, state, tribal, and non-profit and for profit entities, and maintained as a vehicle for dissemination of information to and from the same broad group.

Finding: The Council adopted provisions consistent with the substance of this recommendation. The program calls for the Council to work with others for the establishment of and open access to an Internet-based system for the dissemination of data and research results from StreamNet and the rest of the network of data sites linked to the program. Section III.D.9.

4. Ecological province level -- province visions/objectives/strategies

4(a) General recommendations on development of provincial visions/objectives/strategies

Source: Oregon Department of Fish and Wildlife
Recommendation No. 26

Recommendation: Biological objectives and strategies should be developed for each province as part of the subbasin planning process. Province-level objectives and strategies should assure that biological objectives and strategies for subbasins within a province complement each other.

Finding: The Council adopted provisions consistent with this recommendation. The recommendations and comments the Council received supported the concept of having biological objectives and strategies at the ecological province level, to tie together the objectives and actions in related subbasins and at the same time provide more far more specificity than can be provided at the basin level. But the recommendations and comments differed significantly as to when and how these should be developed and adopted into the program, whether before, during or after subbasin assessments and planning (or some combination of these times). The Council decided to continue discussions with interested parties on when and how best to develop objectives and strategies at the ecological province level. Even if the Council and others decide not to develop a set of province-level objectives, the Council intends, in the course of reviewing and adopting subbasin plans, to ensure that subbasin plans within a province or affecting the same populations or species assemblages complement each other. And, the Council expects that at least at the conclusion of the subbasin planning process, it will conduct a specific amendment process to incorporate provincial visions, objectives and strategies into the program, as critical to documenting what are the specific objectives of the program and providing the basis for evaluating progress toward those objectives. Sections IV.B, VIII.3.

Source: Columbia River Inter-Tribal Fish Commission
Recommendation No.: 40

Recommendation: The Council noted that developing sound, realistic basin and provincial biological objectives requires an iterative process that cannot be completed before draft subbasin assessments and plans are available. The Council should not adopt firm biological objectives during this part of the program amendment cycle. In broad concept, the Commission agreed with the intent of this section. But major concepts are unclear and more discussion is required before it can provide practical guidance for fish and wildlife recovery efforts. Establishing objectives at multiple spatial scales is best accomplished by an iterative process across those scales. It is almost certain that consistent objectives cannot be developed the first time we attempt to use a new approach, especially when we do not have all information (subbasin assessments) in front of us. This is the major reason objectives cannot be adopted at this time.

Finding: The Council adopted this recommendation, as described just above. Sections IV.B, VIII.3.

Source: National Marine Fisheries Service
Recommendation No. 54

Recommendation: The Fisheries Service recommended that the Council develop province-level visions and objectives that incorporate de-listing criteria for ESUs. The program should address recovery needs for threatened and endangered salmon and steelhead to the greatest extent possible. This would be consistent with the technical and planning tasks that the Fisheries Service must engage in the recovery planning process for all ESUs of salmon and steelhead in the Basin.

As the Fisheries Service moves forward to develop recovery plans using technical information developed for that purpose, it intends to rely on existing processes and institutions. The subbasin assessment and planning process proposed by the Council may well provide the organization and include the stakeholders in the interior Columbia basin that would enable the Fisheries Service to rely on this process to develop recovery plans. Subbasin plans would need to be “aggregated” to ensure they will provide for the recovery of the entire ESU. The Council’s program is in a good position for this since the delineations of ecological provinces evaluated by the Council’s framework are very close to the geographic delineations of ESUs. The Fisheries Service will continue to discuss these issues with all of the affected entities in the basin.

Finding: The Council adopted provisions consistent with this recommendation. Sections IV.B, V.A.3, A.5, VIII.3.

Source: Shoshone-Bannock Tribes
Recommendation No. 38

Recommendation: The Shoshone-Bannock noted that the Council’s Strawman proposed that the program contain goals and objectives for geographic sub-divisions of the Columbia River basin, distinct from basin-wide goals and objectives yet larger than those for individual subbasins. This poses two questions: “What is the appropriate geographic sub-division?” And, “what is the purpose for another set of goals and objectives?” The concept of grouping subbasins in different ways is an interesting idea and can be useful. One can have a geologically based physiography or regions based on biomes or hydrologic groupings. All have value for certain kinds of environmental analyses; all have limitations relative to other analyses. Any grouping of subbasins intended to serve several different purposes (such as those in the Council’s program), will be filled with self-limiting compromises.

All of the existing sub-divisions of the basin are valid and should continue to be used for the purposes for which they were established. The program should be flexible and not attempt to impose a single set of sub-divisions to serve a variety of purposes. If the Council proposes a new set of sub-divisions for the Columbia River basin, the program should clearly articulate the need for this different grouping and explain the situations in which it should be used.

Because of the wide variety of subbasins in each province, these objectives will have to be very general. What then is their purpose? If the provincial objectives are intended to constrain or guide the subbasin objectives, what additional guidance is anticipated beyond that provided by the basin-wide objectives? If on the other hand, provincial objectives will be derived by aggregating the subbasin objectives, what additional benefit does the region get? The nature of the proposed province-level goals and objectives and their purpose remains vague, and, as a result, endlessly debatable. The example provided by the Council appears to be a combination. Many of its goals appear to apply to all or most subbasins and hence can be considered as a part of the basinwide goals while its numerical objectives are

really an aggregation of objectives from individual subbasins. The first phase amendments should address goals and objectives applicable to all or most subbasins, including areas above and below hydrosystem blockages. The Council should not develop “provincial” objectives until subbasin plans are adopted. Also, the Council should not break up the mainstem of the river, but instead should adopt a fish management plan for the mainstem Columbia and Snake rivers.

Finding: The Council adopted provisions consistent with this recommendation. Sections IV.B, V.A.3, A.5, VIII.1, VIII.3. The Council agrees that it needs to continue discussions with the fish and wildlife agencies and tribes and others over the what, how and when of province-level objectives. The Council also agrees that province-level objectives and strategies, to be successful, must address population and habitat characteristics specific to that province, and not be so general as to apply to all subbasins in the basin. The purposes will be to aggregate objectives from the related subbasins within the province to assist in monitoring and evaluating progress under the program, to provide insight into and a focus or priority on the types of habitat problems and strategies that are common across a province, and to provide guidance and consistency when subbasin plans are addressing populations that transcend particular subbasins, so that actions in one subbasin complement and do not work at cross-purposes to actions in another. Finally, the Council adopted the recommendation to develop a separate mainstem plan.

4(b) Visions, objectives and strategies for specific provinces

Source:	Upper Columbia United Tribes
Recommendation No.	47
Source:	Spokane Tribe
Recommendation No.	28
Source:	Coeur d'Alene Tribe
Recommendation No.	42
Source:	Kalispel Tribe
Recommendation No.	48
Source:	Kootenai Tribe
Recommendation No.	50

Recommendation: These tribes recommended that the Council reorganize the proposed provinces to create a unified Upper Columbia River Basin Blocked Area Province. This would require a re-configuration of the Council's proposed Inter-Mountain and Mountain Columbia provinces, and include the following subbasins:

- Spokane (all, not separated as in the Council's proposal)
- Upper Columbia
- Nespelem
- Sanpoil
- Colville
- Kettle
- Coeur d'Alene
- lower and upper Pend Oreille
- Priest
- Kootenai
- numerous minor tributaries to the Upper Columbia River

The tribes then recommended a province vision and an extensive set of goals, objectives, strategies and management principles and priorities. Finally, these tribes recommended that all measures in the current (1994-95) program which fall within and/or affect this province should be retained and continue to be funded for implementation unless and until specifically modified or replaced through the subbasin planning process.

Finding: The Council reorganized the Inter-Mountain and Mountain Columbia provinces so that the Inter-Mountain is the same as the upper Columbia province recommended by the tribes. Section IV.A (the table and maps in the "pre-publication" version of the 2000 Fish and Wildlife Program referred to here are not completely accurate in showing the re-configuration; this error is being corrected in the published version). And, the specific objectives and measures in the 1994-95 program remain in effect until superseded in the specific planning phases of the program amendment process.

The Council did not adopt or reject the specific vision, objectives, strategies or other provisions recommended by the tribes for the province or the subbasins in the province. Based on the entirety of the recommendations and comments received, the Council concluded that the time was not ripe to incorporate specific provisions for the provinces in the program. These matters will be an appropriate subject for the subsequent phases in the program revision process, especially subbasin planning, that will adopt specific objectives and measures for geographic regions less than the basin as a whole.

Source: Public Utility District No. 1 of Chelan County
Recommendation No. 4

Recommendation: The district recommended that the provisions to be contained in the habitat conservation agreements for the mid-Columbia region be incorporated, when finalized, as part of the subbasin plans for the Columbia Cascade Province. The agreements under development include establishing a “no net impact” standard for the survival of salmon and steelhead through the Wells, Rocky Reach and Rock Island hydroelectric projects. The proposed standards include 91% per project survival, which is based on a subordinate standard of 95% juvenile dam passage survival calling for 95% of the juveniles over 95% of each species’ migration period to survive migration through each project’s forebay, dam and tailrace. Compensation for the remaining 9% of the unavoidable mortality at each project is to be provided through hatchery and tributary programs, with 7% compensation to be provided through hatchery programs and 2% compensation provided through tributary program. The Agreements continue the “coordinating committees” for the mid-Columbia projects and establish detailed dispute resolution procedures to ensure the timely resolution of disputes.

Finding: This recommendation can be considered in the appropriate processes for developing the mainstem plan and the subbasin plans within that province.

Source: Idaho Department of Fish and Game

Recommendation No. 36

Source: Idaho Water Users

Recommendation No. 18

Source: Boise Valley Fly Fishermen, Inc.

Recommendation No. 14

Recommendation: The Idaho Department of Fish and Game recommended a vision and a set of goals, objectives, strategies, and implementation standards intended to apply to all the ecological provinces in Idaho, and then a specific set for each province (Mountain Columbia, Mountain Snake, Middle Snake, Upper Snake).

The Idaho Water Users separately recommended a vision and a set of biological objectives and strategies for what it called the Upper Snake River Basin provinces (the Blue Mountain, Middle Snake and Upper Snake provinces).

The Boise Valley Fly Fishermen recommended specific but not comprehensive provisions for the Middle Snake province.

Finding: The Council did not adopt or reject the specific vision, objectives, strategies or other provisions recommended by Idaho or the Idaho Water Users for the provinces in that state. Based on the entirety of the recommendations and comments received, the Council concluded that the time was not ripe to incorporate specific provisions for the provinces in the program. These matters will be an appropriate subject for the subsequent phases in the program revision process, especially subbasin planning, that will adopt specific objectives and measures for geographic regions less than the basin as a whole.

5. Subbasin plans

5(a) Elements of a subbasin plan, including assessments

Source: Oregon Department of Fish and Wildlife
Recommendation No. 26

Recommendation: Oregon recommended that biological objectives and strategies for subbasins should be developed as part of a regional subbasin planning process and then adopted as part of the program. Subbasin plans should be consistent with the visions and objectives at province and basin levels. Actions to implement the program should principally be planned and evaluated at the subbasin level. Subbasin plans should provide the ultimate direction for fish and wildlife and water quality management activities funded by Bonneville and provide the context in which the Independent Scientific Review Panel will review fish and wildlife proposals for funding. Subbasin plans should also include strategies and actions funded by others. Each subbasin plan should not only serve the purposes of the Council under the Northwest Power Act, but should also serve the purposes of fish and wildlife, water, and land managers under the Endangered Species Act, the Clean Water Act, and other laws governing natural resource management.

Each subbasin plan should include the following components:

- *Subbasin assessment*, providing a description of historical and existing conditions, an assessment of limiting factors and the biological potential of the subbasin and an identification of protection and restoration opportunities. The assessment also should include an inventory of existing and past projects and clearly and comprehensively describe what is being done and what has been accomplished in the subbasin.
- *Strategic plan*, with a 10- to 15-year time horizon, describing the vision and biological objectives for the subbasin and the strategies to be taken to achieve the biological objectives. The strategic plan should include a comprehensive monitoring and evaluation plan.
- *Implementation plan*, with a three-year time horizon, details the specific actions and measures to implement the strategies in the subbasin plan. The implementation plan should be a “living” document, that is, updated as projects sunset and new ones begin. It should be separate from the subbasin plan and should not be adopted into the program.

To assure that subbasin plans address the broadest set of needs, the region should develop and use a standard template for subbasin assessments and plans. Subbasin plans for a province should be developed in concert with each other, and should be evaluated to determine what, if any, impacts each has on the others.

Finding: The Council adopted provisions consistent with this recommendation for the function and structure of subbasin plans and their relationship to each other and to the province and basin elements of the program. The comprehensive revision of the program will include a “subbasin planning process” using the procedures provided in the Act for program amendments. The program calls for the subbasin plans to integrate Endangered Species Act and Clean Water Act requirements as fully as possible. Section V; *see also* Sections II.B and C, VI.A.3, VIII.4.

The Council adopted the subbasin assessment template developed by a Subbasin Assessment Science Team as part of the Technical Appendix to the revised program. *See* Section V.A.3, Technical Appendix C. That template will be the foundation for subbasin assessments conducted for the program’s subbasin planning process in conjunction with the region’s state, federal, and tribal fish and wildlife managers and other interested parties. The Council also outlined the elements of the plan itself, *see*

Section V.A.1, A.2, A.4, A.5, but did not adopt at this time a subbasin plan template that describes with more specificity the content required for subbasin plans. The Council concluded that a subbasin planning template may in fact be desirable, but that it would be more productive and effective to work with interested parties in the region to further develop and finalize the draft template outside of this phase of the program amendment rather than adopt an incomplete product that has not been sufficiently considered by the majority of entities interested in subbasin planning throughout the region.

Source: National Marine Fisheries Service
Recommendation No. 54

Recommendation: The Fisheries Service recommended:

- The program at the subbasin scale should consist of two separate tasks and be done by two separate teams. Subbasin assessment should be a separate task from subbasin planning.
- Subbasin and watershed assessments and plans should build on and add to those that are already complete. A template should be used for all subbasin assessments and subbasin plans, and the Council should work with the states and tribes on templates for finer-scaled watershed assessments and plans. Consistent approaches to technical assessments and plans are necessary to feed a basin level system of monitoring, evaluation and reporting. Not all subbasin assessments and plans should look the same; NMFS expects plans to vary in substance across the subbasins. Templates will help to organize information and report on results in a manner that can be aggregated across the provinces and subbasins.
- Adopt the subbasin assessment template developed by the Subbasin Assessment Science Team. Fund and complete the analyses recommended in the template for at least all 33 of the anadromous fish subbasins. The template's value is that it will enable consistent and repeatable assessments across land ownerships and programs. This consistency will in turn enable program managers and stakeholders to collectively assess present fish and wildlife capability, coordinate priority actions, and measure progress at the basin, ESU, province and subbasin levels. The template should be viewed as a sound approach that should be implemented immediately with the understanding that new knowledge will call for iterative refinements in the future.
- In addition to the elements suggested in the Strawman, subbasin plans should identify priority watersheds for assessments, protection, restoration and priority strategies. These elements should be added to the template for subbasin plans when it is developed. Including elements that require subbasin plans to address priorities is important to ensure that resources are targeted for the greatest benefit.
- Subbasin plans should explicitly address how they respond to the findings of subbasin assessments and how proposed priorities and measures address the risks and opportunities identified in subbasin assessments. NMFS understands that the subbasin assessment is just one component that will influence decision-making in subbasin planning. However, it represents the synthesis of relevant science, and subbasin planners should be accountable for clearly describing how they applied the science to their decisions.
- Subbasin plans should not only inventory projects and accomplishments within the program, but also those within other programs in the subbasin. In order to take actions that are collectively valuable and synergistic, the accomplishments and plans of other programs must be taken into account.
- Subbasin plans should explain how proposed program priorities and measures are explicitly integrated with and complementary to other federal, state and local programs in the subbasin.
- Subbasin plans should provide clear context, expectations and guidance for watershed plans at smaller scales. The program's subbasins are typically 4th field HUCs (hydrologic unit codes).

Many state and local watershed efforts have been organized at smaller 6th field HUCs. It is essential that approaches at these different scales be integrated or “nested.” It is also essential that subbasin assessment and planning build on and enhance existing watershed level assessment and planning efforts.

Finding: The Council adopted provisions consistent with these recommendations for the function and structure of subbasin plans. The program provides that subbasin assessments and plans shall be separate analytical and planning tasks, and that both assessments and plans should start from existing information and plans. The program also provides that the plans shall be responsive to the assessments, seek to integrate Endangered Species Act and Clean Water Act requirements as fully as possible, and address the range of all fish and wildlife activities in each subbasin. Section V.A.2-5.

The Council adopted the subbasin assessment template developed by the Subbasin Assessment Science Team as part of the Technical Appendix to the program, and that template will be the foundation for subbasin assessments that will be completed or facilitated by the Council in conjunction with the region’s state, federal, and tribal fish and wildlife managers and other interested parties. Consistent with the recommendation that different people be responsible for assessments and planning, the program recognizes that subbasin assessment is a technical exercise, requiring expertise different from that required for making decisions on management activities based on the assessments. Section V.A.3, Technical Appendix C.

The Council also outlined the elements of a subbasin plan itself, *see* Section V.A.1, A.2, A.4, A.5, but did not adopt at this time a subbasin plan template that describes with more specificity the content required for subbasin plans. The Council concluded that a subbasin planning template may in fact be desirable, but that it would be more productive and effective to work with interested parties in the region to further develop and finalize the draft template outside of this phase of the program amendment rather than adopt an incomplete product that has not been sufficiently considered by the majority of entities interested in subbasin planning throughout the region.

Source: Montana Fish, Wildlife and Parks
Recommendation No. 31

Recommendation: Montana recommended that subbasin plans contain a subbasin assessment; a fish and wildlife strategic plan; and a three- to five-year implementation plan. The main purpose should be to document activities necessary to protect, mitigate, and enhance fish and wildlife resources in the basin, substantiate budgets and measure progress for accountability. Once the plans are adopted, on-the-ground work should proceed with greater efficiency due to a reduction in annual process. Subbasin plans should provide fish and wildlife information for a variety of related planning processes. Examples include the U.S. Fish and Wildlife Service’s and National Marine Fisheries Service’s (NMFS) Endangered Species Act (ESA) recovery planning, land management and water quality planning and long-range Bonneville budget planning, in addition to the Council’s project selection efforts.

Finding: The Council adopted provisions for the function and structure of subbasin plans consistent with the recommendation, including the coordination and integration with other recovery planning and land and water management actions. Section V.

Source: Idaho Department of Fish and Game
Recommendation No. 36

Recommendation: Idaho recommended that subbasin plans have the three major sections also recommended above: a scientific assessment, a long-term strategic plan, and a three-year implementation plan.

Finding: The Council adopted provisions consistent with the recommendation. Section V.

Source: Colville Confederated Tribes
Recommendation No. 33

Recommendation: Subbasin planning efforts should describe the activities necessary to protect, mitigate, and enhance fish and wildlife resources in the basin in coordination with Endangered Species Act recovery planning, land management and water quality planning and long-range Bonneville budget planning. Subbasin plans should, at a minimum, have four inter-related sections: subbasin assessment, a fish and wildlife strategic plan, a three-year implementation plan, and monitoring and evaluation provisions.

The subbasin assessment section should identify populations targeted for management and provide information on the current condition or status of the fish and wildlife resources and their habitat. This section will also detail the factors or conditions that limit or reduce the target fish and wildlife populations, based on the best science that is available. The fish and wildlife strategic plan should define the management intentions of the tribes and agencies for the identified target populations under their jurisdiction. The strategic plan should include the managers' goals, management objectives, biological objectives for fish and wildlife populations, the location and quality of the habitat needed in the subbasin, and recommendations for methods, approaches, or strategies to achieve the objectives. The three-year implementation plan should detail specific actions or measures that the subbasin team recommends be carried out over the next three years and may also include descriptions of what has been accomplished for fish and wildlife. The implementation plan should evolve over time as monitoring and evaluation provide information to update and or improve the subbasin plans.

The monitoring and evaluation plan should detail evaluation criteria for performance measures, performance standards, standardized methods, reporting criteria to assess the relative effectiveness of actions implemented in the subbasin towards biological and management objectives and goals. Analysis of monitoring and evaluation data will improve our understanding of the resource response to implementation actions and will be critical to improving a strategies and implementation plans over time.

Finding: The Council adopted provisions consistent with the recommendation for the structure and function of subbasin plans. Section V. The subbasin management plan is to include goals, objectives and strategies developed by the interested parties in the subbasin, including objectives and strategies that are consistent with the activities, objectives and legal rights of the fish and wildlife agencies and tribes in that subbasin. Section V.A.5.

Source:	Spokane Tribe
Recommendation No.	28
Source:	Burns-Paiute Tribe
Recommendation No.	34
Source:	Shoshone-Bannock Tribes
Recommendation No.	38
Source:	Coeur d'Alene Tribe
Recommendation No.	42
Source:	Kalispel Tribe
Recommendation No.	48
Source:	Kootenai Tribe
Recommendation No.	50

Recommendation: The recommendations from these tribes overlap with the subbasin plan recommendations summarized above:

The central focus of the program should be subbasin plans, describing what they are, how they are to be created and amended into the program, and how they will affect fish and wildlife actions in the Columbia River basin. Subbasin planning is an on-going cyclic effort. First, assessment activities address the question, "Where are we now?" or "What is the status of the resources?" Next the managers must address the question, "Where do we want to be?" by setting objectives and defining strategies. Third, the managers develop an action implementation plan to address "How will we get there?" Finally, monitoring and evaluation must be done to address the question, "How will we know when we get there?" The results of monitoring and evaluation will improve our understanding of the resource status allowing update of the assessment.

Subbasin plans should have at least three interrelated sections: subbasin assessment; fish and wildlife strategic plan; and a three-year implementation plan:

The subbasin assessment section should provide information on the current condition or status of the fish and wildlife resources and their habitat and assess risks and opportunities for restoration. Although the principal intent is to describe the activities necessary to protect, mitigate, and enhance fish and wildlife resources in the basin under the program and the Power Act, the subbasin plans should also provide fish and wildlife information for a variety of related planning processes, such as ESA recovery planning, land management and water quality planning, and long-range Bonneville budget planning.

The fish and wildlife strategic plan should identify populations targeted for management and define the management intentions of the tribes and agencies for the identified focal populations under their jurisdiction. The strategic plan will include the managers' objectives for fish and wildlife populations, the location and quality of the habitat needed in the subbasin, and recommendations for methods, approaches, or strategies to achieve the objectives.

The three-year implementation plan should detail specific actions or measures that the subbasin team recommends be carried out over the next three years. The implementation plan also will include monitoring and evaluation activities that should be undertaken, thus providing the information needed to update or improve the subbasin plans during their subsequent revisions.

Finding: The Council adopted provisions consistent with these recommendations regarding the function and structure of subbasin plans. Sections II.B, II.C, V. While all geographic levels of the program are important, the program recognizes that the subbasin level is where implementation strategies are principally planned and implementation occurs. The program explains the function and structure of

subbasin plans and how they are intended to affect fish and wildlife management in the Columbia basin in a manner consistent with the recommendation. And, the program describes how subbasin plans will be created, the schedule and process for adopting them into the program, and the fact that the plans are meant to be dynamic, that is, the Council anticipates refinement of subbasin plans over time as more is learned through careful monitoring and evaluation. Sections V.A.6, VIII.4.

The recommendations from these tribes focused on the roles of fish and wildlife managers in the subbasin planning process. Consistent with these recommendations, the subbasin management plan is to include goals, objectives and strategies that are consistent with the activities, objectives and legal rights and obligations of the fish and wildlife agencies and tribes in that subbasin. Section V.A.5, A.6. The special considerations owed to fish and wildlife management entities are derived from the Power Act provisions, which the Council will follow to adopt subbasin plans into the program. The Council did not interpret the recommendation to suggest that fish and wildlife managers should have sole responsibility for developing the subbasin plans. Subbasin plans will depend for their success in significant part on the support of all the people whose land and water activities will be affected in that subbasin, and that encompasses a group much larger than just the fish and wildlife managers. Thus, the Council called for a subbasin planning process that is open to land and water managers, local governments, landowners, watershed councils and others with an interest or expertise in the subbasin, as well as fish and wildlife managers.

Source: Columbia River Inter-Tribal Fish Commission
Recommendation No. 40

Recommendation: The Commission's recommendation began with the subbasin planning provisions proposed in the Council's Strawman, which were substantively similar to, if more general than, the recommendations subsequently received from various fish and wildlife agencies and tribes summarized above. The Commission then added that substantial justification is needed to convince the region that subbasin planning is a worthwhile effort. The Commission supported subbasin planning only if truly critical to evaluation of project proposals and to producing a uniform approach to fish and wildlife restoration across the entire Columbia River basin. The purpose of subbasin planning is to have future management and funding decisions be based on solid scientific assessment of ecosystems, an analysis of risk and benefits of different restoration options, and concerted planning efforts among agencies that take into account current governmental regulations.

More detail is needed than proposed in the Strawman on what a subbasin assessment will entail. At a minimum the program should reference a different document that explains the requirements of a subbasin assessment, or explain that any well-established assessment protocol can be followed, or provide that the Council will make a decision on this in the future.

Finding: The Council understood the recommendation to support what the Council adopted for the function and structure of subbasin plan. To provide guidance on the components of a subbasin assessment, as recommended, the Council adopted as part of its Technical Appendix a subbasin assessment template developed by an ad hoc Subbasin Assessment Science Team, which included participation by Commission staff.

Source: Bonneville Power Administration
Recommendation No. 37

Recommendation: Bonneville recommended:

- The assessment component of the plan should not dwell too much or take too much time to document the historical habitat conditions.
- The management plans should be 100-year plans with a 5-year action plan.

Finding: The Council adopted as part of its Technical Appendix a subbasin assessment template that does call for, among many other things, an assessment of historical habitat conditions to serve as a foundation for evaluation both the changes that have occurred in habitat conditions and the potential of the area for habitat. Section V.A.3, Technical Appendix C. This template was developed and agreed upon by a group of federal, state, and tribal scientists and others. The Council is confident that this group of experts struck an appropriate balance among the assessment components.

The Council called for subbasin plans to have a “management plan component” that contains a 10-15 year plan as well as a three-year action plan and budget. The Council is not calling for these plans to include objectives and strategies with a 100-year focus, but the plans should contain a long-term vision of at least many decades that is framed in the context of the long-term vision and near-, medium- and long-term (100 year) biological objectives for the program as a whole. *See* Sections III.A.1, III.C.2. The Council anticipates that subbasin plans, including their assessment component and management plan component will be refined, updated, and changed over time as they are implemented in response to new information gathered through the monitoring and evaluation activities. Further, if the activities being undertaken on behalf of fish and wildlife modify the environment or fish and wildlife populations in beneficial or detrimental ways, management plans will need to be modified to take into account these changes. The Council finds that a management plan with a shorter planning term will be more effective in assimilating this new information, and many other recommendations agree. However, the program does require the development of a “vision” at each level -- basin, province, and subbasin -- and these visions are to be “end state” descriptions of a desired condition or suite of attributes for the planning unit at some point in the relatively distant future. To the extent that the recommendation calling for a 100-year planning horizon is intended to give a long-term perspective and anchor to the management actions selected over time, the provisions adopted by the Council requiring an end-state vision for the basin, each province and each subbasin plan are consistent with the second element of this recommendation.

Source: U.S. Geological Survey and Confederated Tribes of the Colville Reservation
Recommendation No. 22

Recommendation: The Survey and the Colville Tribes recommended that the fish and wildlife program include water quality considerations in its overall assessment and management goals at the subbasin level. This does not mean that all subbasins need to have a detailed water quality assessment. There are three ways in which water quality needs to be integrated into the program:

- Preliminary assessments of subbasins should include a review of existing water quality information with a preliminary ranking of parameters that may be limiting to the protection and/or restoration of aquatic life.
- In some basins it may be necessary for the program to fund projects that fill in some of the known gaps in water quality.

- If water quality conditions appear to be a problem within a basin, then the program should fund proposals that assess the influence of these conditions on fish health and survival.

For all three of the types of assessments above, it is important that all proposals integrate the influence of flow management practices on water quality.

Finding: The Council adopted provisions consistent with the recommendation. First, the program requires subbasin plans to include a subbasin assessment. The Council adopted as part of its Technical Appendix a subbasin assessment template developed by regional scientists that specifically includes a review of water quality information and data, as well as an analysis of key habitat parameters and a synthesis and interpretation that will relate attributes of the environment to the biological performance of species of interest and allow for comparisons among those attributes. Section V.A.3, Technical Appendix C. Where water quality issues and knowledge gaps that are relevant to fish and wildlife are apparent from the assessments, the subbasin management plans will need to address those issues.

Source: Washington Department of Ecology
Recommendation No. 6

Recommendation: The Department of Ecology recommended that the program require an assessment of ecosystem conditions by evaluating the changes to natural processes, since these result in the habitat characteristics currently present and define the potential for any restoration efforts.

Finding: The Council adopted provisions consistent with this recommendation. The vision, scientific principles, biological objectives and habitat strategies for the program as a whole, as well as the subbasin assessment template adopted as part of the Technical Appendix, strongly emphasize evaluating changes in natural processes as critical to understanding biological performance. See Sections III.A.1, A.2, B.2, C.2.b and Appendix D, D.3, V.A.3, Technical Appendix E.

Source: Public Utility District No. 1 of Chelan County
Recommendation No. 4

Recommendation: The Chelan PUD recommended that a requirement of a relatively fixed template or structure for subbasin plans does not facilitate negotiated plans. There should be a preference for supporting solutions negotiated by the parties affected by the plans. In order to achieve a negotiated package, those involved in the negotiations have to be creative in the manner in which they find common understandings. The fact that a negotiated solution does not create an entire subbasin plan, or is different from the vision for the basin, province, or subbasin, should not be a reason to reject a plan that otherwise has a strong level of support. The subbasin planning objectives may be too rigid, or the Council should be prepared to grant liberal exceptions for negotiated subbasin plans.

Finding: The Council adopted provisions consistent with at least one basic premise of this recommendation. The Council did not adopt a rigid subbasin planning template or structure for subbasin plans. The program generally describes the elements of the management plan portion of the subbasin plan, but it does not prescribe a fixed structure or substantive content for the plans. Moreover, the Council recognized that subbasin plans need a substantial amount of local support for successful implementation, and so the program emphasizes the need for significant local participation in the development process. The Council also recognized that precisely how to bring about this local

participation and support could be different in each subbasin, and so the Council will work with state, tribal, federal, and local parties to determine which approach is most likely to succeed in any particular subbasin and then help support that approach. Section V.A.2, A.6.

The Council did not accept that part of the recommendation that suggested, in the abstract, that the Council should accept into the program any subbasin plan created through a negotiated settlement among affected parties. First, the Power Act provides certain substantive and procedural requirements for subbasin plans to be adopted into the program. *See* Section V. The Council does not have the discretion to encourage the development of or to adopt plans into the program that do not meet the legal standards of Section 4(h) of the Power Act, even if negotiated between the parties affected.

In addition, the Council adopted at this time a vision and objectives and strategies for the basin as whole. The Council intends these to be sufficiently general to allow a great deal of flexibility at the local level in developing plans consistent with this program framework. That is not the same as saying that the Council will adopt any subbasin plan negotiated by the affected parties even if clearly inconsistent with the basinwide elements. The concept and effectiveness of the program framework relies upon plans at smaller spatial scales being consistent with the general vision, objectives and strategies adopted for the program as a whole. This is the approach that ensures that the varied and distinct efforts throughout the Columbia basin are coordinated and aggregate together to form a logical plan to protect, mitigate and enhance fish and wildlife. The Council finds that requiring this sort of coordination and consistency throughout the program will be more effective in achieving the purposes of the Act. Further, the Act requires the Council to treat the Columbia River and its tributaries as a system. The recommendation to permit plans and proposals to be adopted without being coordinated with other objectives or standards established within the basin, province, or subbasin would not effectively provide this systematic planning.

5(b) Procedure for developing subbasin plans/participation

Source: Oregon Department of Fish and Wildlife
Recommendation No. 26

Recommendation: Oregon recommended that the Council adopt a three year schedule for completion of subbasin plans, including public review requirements. After this three year period, the plans will be submitted to the Council for adoption into the program. In the interim, existing management plans and the best subbasin information available should be used in implementing the fish and wildlife program. Although subbasin plans should be completed expeditiously, a one-year time frame is inadequate to complete the plans. The enormous breadth (53 subbasins) and scope (comprehensive subbasin and watershed assessments and plans for anadromous fish, resident fish, and wildlife) and coordination requirements (all of regional entities including the public and local stakeholders) of this planning effort simply cannot be completed in one year. Additional time will be needed to coordinate the Council's planning effort with planning efforts in Oregon, including natural production planning under HB 3609, water quality planning under Section 303(d) and SB 1010, and planning under the Oregon Plan for Salmon and Watersheds.

The Council should enlist the full participation of Columbia basin fish and wildlife managers in the development of subbasin plans; the Power Act directs the Council to give special consideration to the recommendations of tribal, state, and federal fish and wildlife managers when considering matters related to fish and wildlife in the Columbia Basin. The Council should also encourage and enable the participation in subbasin planning of water and land managers; they are needed if subbasin plans will not only serve the purposes of the Council under the Power Act, but also the purposes of fish and wildlife, water, and land managers under the Endangered Species Act, the Clean Water Act, and other laws governing natural resource management.

The Council should recognize the major on-going efforts of state and local agencies in developing watershed assessments and plans. As such, subbasin planning teams should include state and local agencies, watershed councils, and others interested in participating in the process. To the fullest extent practicable and consistent with the Power Act, subbasin plans should build upon assessments and information already prepared by others as part of their on-going planning efforts.

Finding: The Council adopted provisions based on this recommendation. Sections V, VIII.4.

Source:	Spokane Tribe
Recommendation No.	28
Source:	Montana Fish, Wildlife and Parks
Recommendation No.	31
Source:	Colville Confederated Tribes
Recommendation No.	33
Source:	Burns-Paiute Tribe
Recommendation No.	34
Source:	Shoshone-Bannock Tribes
Recommendation No.	38
Source:	Coeur d'Alene Tribe
Recommendation No.	42
Source:	Washington Department of Fish and Wildlife
Recommendation No.	43
Source:	Kalispel Tribe
Recommendation No.	48
Source:	Kootenai Tribe
Recommendation No.	50

Recommendation: These fish and wildlife agencies and tribes all recommended some version of the following:

Decisionmaking regarding Bonneville fish and wildlife funding based on subbasin plans should take place in three linked stages. First, locally-based teams should develop draft subbasin plans. Next, the Council should review these plans in a rulemaking proceeding that amends the plans into the program. Finally, Bonneville should use the amended subbasin plans as the basis for funding fish and wildlife activities.

The first stage, subbasin planning, should start with the convening of subbasin teams in each subbasin. The subbasin teams will be responsible for compiling the subbasin plans and ensuring that they receive public review. The membership of the teams (federal, state and tribal fish and wildlife managers; federal, state, and tribal land managers; federal, state and tribal water quality managers; private land and water owners; watershed councils; CBFWA staff, Council staff, conservationists, local officials) and the members' roles were outlined in a table that is part of the recommendation. The fish and wildlife agencies and tribes have legal authority to manage fish and wildlife resources based on treaty and statute. To the extent that the fish and wildlife managers have jurisdiction over land and water (e.g., wildlife refuges and tribal lands), they will serve as land and water managers as well. However, most public and private lands are managed by others, under separate authorities.

The subbasin teams will then develop the draft assessment, strategic plan and implementation plan. Two types of decisions are part of the process. The fish and wildlife managers must identify objectives and strategies for focal (or target) populations and their habitats. Second, the subbasin team must recommend actions, following the identified strategies, to meet the objectives in the fish and wildlife strategic plan.

The key set of decisions to be made in subbasin planning involve the fish and wildlife managers, in choosing production and harvest objectives and actions, and the land and water managers, recommending habitat actions in coordination with the fish and wildlife managers. The actions chosen will have to contribute to achieving the population or habitat objectives. The actions must also be consistent with the statutory standards, scientific principles and policies governing the subbasin program

amendment process. The choice of actions may be influenced by management considerations, such as management priority, appropriate sequence, or coordination with other activities.

Fish and wildlife managers will have the ultimate responsibility for development of the fish and wildlife management objectives for the subbasin plans and will be responsible for coordinating the development of these objectives during the Council's public process. Land managers, watershed councils, private land owners and any other interested parties will also have an opportunity to comment on the strategies and actions, within the side boards set by science.

The Council should establish a team of scientists familiar with fish and wildlife restoration and enhancement to be available to assist subbasin teams as needed. This science team may assist the subbasin teams to address questions regarding best available scientific information, the nature of limiting factors, and the assessment of risks and benefits of different strategies. Members of the science team could be involved with the subbasin teams as they develop the draft subbasin plans.

When the drafts have been assembled, the Council, fish and wildlife managers and CBFWA staff will take the lead in getting the draft plans reviewed by the public. Interested stakeholders must be involved at each step of the subbasin planning process. Although the fish and wildlife managers will have the ultimate responsibility for development of the fish and wildlife management objectives, they will be responsible for coordinating the development of these objectives in a public process. It is expected that land managers, watershed councils, private landowners and any other interested parties will also have an opportunity to participate in the development of strategies and actions. The subbasin team can incorporate any needed changes resulting from reviewer comments.

Finally, the core members of the subbasin team will try to reach agreement among themselves and with other stakeholders in the subbasin prior to when the draft subbasin plan is forwarded to CBFWA for dissemination and review. Following CBFWA review, the subbasin plans will then be sent to the Council with a request that the plan be amended into the program. If the subbasin team members have opinions not reflected in the draft plan, those opinions should be appended to the draft plan.

Finding: The Council adopted provisions into the program consistent with the substance of this recommendation, if more general. There are differences between the recommendations and the provisions adopted in Sections V regarding subbasin plan development, but the Council finds that the differences are more a matter of emphasis than fundamental substantive conflict, and that these differences do not represent a material departure from the substance of the recommendations, as follows:

The Council called for the development of locally-based subbasin plans, their recommendation to the Council for review and adoption into the program, and for Bonneville's annual fish and wildlife funding decisions then to be based upon subbasin plans. Sections V, VI.A.3, VIII.4.

Consistent with the recommendation, the Council also called for the subbasin plans to be developed through the broad participation of affected people in the subbasins, in "an open public process that provides ample opportunity for participation by a wide range of state, federal, tribal, and local managers, experts, landowners, local governments, and stakeholders." These recommendations focused heavily on the central role that the fish and wildlife managers should play in the subbasin planning process. Consistent with these recommendations, the subbasin management plan must include goals, objectives and strategies that are consistent with the activities, objectives and legal rights and obligations of the fish and wildlife agencies and tribes in that subbasin. Section V.A.5, A.6. The special considerations owed to fish and wildlife management entities are derived from the Power Act provisions, which the Council must follow to adopt subbasin plans into the program. Thus the fish and wildlife

managers will have to play an important role in the development of the subbasin plans, and the substance of the plans that result will need to reflect their particular contributions.

On the other hand, the Council did not adopt provisions specifically designating the fish and wildlife managers or anyone else to be the “lead entities” or exclusive decisionmakers for specific elements of the subbasin plans, based on authorities or jurisdiction or any other factor. There are at least two reasons for this. First, based on many consultations and comments it received during the amendment process, the Council concluded that the development of subbasin plans must be open and inclusive and largely locally driven if the plans are to be successfully implemented. In other words, subbasin plans will depend for their success in significant part on the support of people whose land and water activities will be affected in that subbasin, which is a group far larger than just the fish and wildlife managers. The Council finds that for the Council to designate certain entities at this stage as “in the lead” for specific elements of the plans could frustrate the goal of full and meaningful participation by all of those interested in plan development. That is why the Council recognized the special considerations due to the recommendations of the fish and wildlife managers under the Act in terms of the substantive content that the plans must ultimately reflect, rather than through assigning the managers the lead status in developing the plans. The Council believes that this is the more appropriate and effective level of emphasis to place on the role of fish and wildlife managers at this point. Second, in the case of the states, it is not clear that the state fish and wildlife agencies will in fact be the “lead” or primary entity that will coordinate subbasin plan development on behalf of the states. On the whole, the Council finds that it is likely to be more effective to gather the interested parties for subbasin planning, and let roles and responsibilities evolve within the process rather than prescribe them, while providing notice that subbasin plan content and development procedures must satisfy the Power Act’s standards in order for the Council to be able to adopt the plans into the program.

Source:	Spokane Tribe
Recommendation No.	28
Source:	Colville Confederated Tribes
Recommendation No.	33
Source:	Burns-Paiute Tribe
Recommendation No.	34
Source:	Shoshone-Bannock Tribes
Recommendation No.	38
Source:	Coeur d’Alene Tribe
Recommendation No.	42
Source:	U.S. Fish and Wildlife Service
Recommendation No.	46
Source:	Kalispel Tribe
Recommendation No.	48
Source:	Kootenai Tribe
Recommendation No.	50

Recommendation: These tribes and the Fish and Wildlife Service provided various versions of the following:

The Council should issue a second request for Phase II amendment recommendations as soon as possible, but no later than the adoption of these Phase I amendments. The Phase II amendments would include specific measures or actions to be carried out in the Columbia River basin and its tributary subbasins. The amendments should include specific systemwide measures and measures applicable to the configuration or operation of the federal hydropower system. The Phase II recommendations could be for

a single action or measure in a subbasin or for a partially-completed “subbasin plan.” More time will be needed to complete the scientific studies and stakeholder involvement required in a subbasin plan. Make the Phase II amendment recommendations due on or before April 1, 2001; complete the Phase II amendment process by July 31, 2001. Upon adoption of the Phase II amendments, the managers recommend that the Council review the ISRP provincial review schedule and request that Bonneville solicit projects to start new initiatives.

Finding: Consistent with these recommendations, the Council adopted provisions calling for subsequent phases of the program revision process, in which specific objectives and measures for the program will be adopted in integrated subbasin plans and in a coordinated plan for the mainstem hydropower system. *See* Section VIII.

The Council did not adopt the specific timelines recommended for these amendment processes, calling instead for the development of the mainstem plan in 2001 and the subbasin plan over a three-year period following the first phase. Comments received on the draft program, including in informal consultations and comments from these entities, called for a somewhat more deliberate process to complete the revision of the program, including more time to develop subbasin assessments prior to developing subbasin plans. Also, in addition to its program amendment responsibilities, the Council is administering project review and funding recommendations in the rolling provincial review process and conducting day-to-day business on several other initiatives, and it needed to establish a schedule that both the Council and others could manage. At the same time, the Council has committed to an approach to subbasin planning that should allow an early opportunity for consideration of subbasin plan recommendations in those areas that are ready. *See* Section VIII.4.

Source: Spokane Tribe
Recommendation No. 28

Recommendation: The Spokane Tribe recommended that subbasin planning be broadly inclusive of all governmental and non-governmental entities who have legitimate interests in the planning process. However, decisionmaking must be retained in the state, federal and tribal governments through their fish, wildlife, water, and land managers.

The Council should postpone all plans to initiate amendments to adopt subbasin plans until after the current phase 1 amendments have been adopted through a completed rulemaking process. The program should also include language providing that all measures in the existing (1994-95) fish and wildlife program continue to be funded for implementation until explicitly modified or replaced through a subbasin planning process in which all the fish and wildlife managers, including the tribes as sovereign tribal governments, have participated.

Finding: The Council adopted provisions consistent with this recommendation, as explained in response to recommendations above. Section V, VIII.4. The subbasin planning provisions adopted did not define rigid roles among subbasin planning participants. That is, regardless of what entity may have final “decisionmaking” authority in a particular case, the Council recognizes the need for broad agreement among managers and others if subbasin plans are to be effectively implemented. For example, it will mean little for fish and wildlife protection, mitigation, or enhancement if an agency with decisionmaking authority over fish and wildlife insists on unilaterally deciding on the objectives and strategies for fish or wildlife if that entity does not also have the funding, resources or authority to require on-the-ground actions affecting private lands and water rights to achieve the objective. In a habitat-based approach, decisionmaking authority as to what should be the fish and wildlife objectives is not often

combined with decisionmaking authority as to whether or not actions that meet the objectives can actually happen on the ground. For that reason, the Council did not emphasize or seek to specifically define the roles or jurisdictions of those who will assist in subbasin planning, while recognizing that there are certain standards in the Power Act, including those that give special considerations to the recommendations and activities of the fish and wildlife agencies and tribes, that must be reflected in a subbasin plan if the Council is going to be able to adopt the plan into the program.

Specific objectives and measures in the existing 1994-95 program continue in effect until superseded in the completion of the program amendment process. Section IX.

Source: Coeur d'Alene Tribe
Recommendation No. 42

Recommendation: The Coeur d'Alene Tribe recommended that subbasin planning be broadly inclusive of all governmental and non-governmental entities that have legitimate interests in the planning process. Decisionmaking, however, must be retained in the state, federal and tribal governments through their fish, wildlife, water and land managers. The tribe supported having fish and wildlife managers coordinate fish and wildlife needs with other resource managers and stakeholders. However, it is clear that the ultimate responsibility for these resources lies solely within the appropriate government agencies.

Finding: See the finding immediately above.

Source: Montana Fish, Wildlife and Parks
Recommendation No. 31

Recommendation: Montana recommended that funding be provided to staff subbasin planning adequately to meet the ambitious schedule without affecting ongoing program measures and staff. Care should be taken to minimize impacts to on-the-ground actions. Montana anticipated that its portion of plan preparation and the public scoping and involvement process will cost roughly \$200,000, based on past experience with the state's mitigation planning effort. This expense cannot be borne by existing projects without sacrificing existing mitigation actions. Additional funding should be provided through the program.

Scientists familiar with fish and wildlife restoration should be consulted, as needed, during the subbasin planning process. Experts from various disciplines will be useful to assist the subbasin teams in addressing uncertainties (e.g. questions regarding best available scientific information, the nature of limiting factors, and the assessment of risks and benefits of different strategies). Do not convene a formal science team for this purpose; another team would be redundant.

Finding: The Council agrees that additional funding from Bonneville will need to supplement the current resources available for the development of subbasin plans. Specific funding recommendations are made by the Council pursuant to section 4(h)(10)(D) of the Act, rather than as a matter of program amendments. As recommended, the Council intends at this time to use existing scientific panels and advisory groups to help in subbasin planning and review subbasin plans, rather than create new or additional review groups.

Source:

Columbia River Inter-Tribal Fish Commission

Recommendation No.

40

Recommendation: The Commission noted that the Council's discussion of subbasin planning in the Strawman lacked sufficient detail and effort necessary to guide the region into a future planning effort, giving too vague guidance as to how these plans will be developed, who will develop them, and what form they will follow. The Commission supported the coordinated effort through Columbia Basin Fish and Wildlife Authority to develop a subbasin planning template. However, the template being developed is a work in progress, and the Commission cannot accept an incomplete work product. Subbasin planning is an important function to ensure an appropriate use of Bonneville Power Administration funds. However, the Council must develop a new fish and wildlife program that is more action oriented to meet quantitative objectives and should not retreat to an elaborate planning process that delays actions or is otherwise counter-productive.

The Commission then recommended that the Council and Bonneville provide funding for subbasin planning efforts for each subbasin of the Columbia basin within each respective state, and that the Council ensure that in the subbasin planning effort:

- One agency or tribe should be designated as a lead coordinating body for the subbasin planning process.
- The lead agency or tribe should be responsible for making available to any cooperator all data, analysis, and summaries developed by them and cooperators in planning.
- Data collection, analysis, summary, and planning process should rely on the subbasin template as the minimum guidance for data needs
- Creation of the plan should be done with full participation and input from interested cooperators and the public.
- As part of the development process, compile all existing plans, programs, policies, laws and other appropriate authorities that relate to comprehensive watershed management in each watershed.
- Identify gaps and conflicts in the existing plans, programs, policies, laws and other appropriate authorities that hinder comprehensive watershed management in the watershed.
- Set out a path and procedures for filling gaps and addressing conflicts.
- Identify key factors limiting salmon and steelhead productivity.
- Identify priority on-the-ground actions to address key limiting factors.
- Identify all parties with an interest in the subbasin plan being created after other cooperators have compiled available data and conducted the technical watershed analysis. Set up procedures to ensure that all these parties have the opportunity to participate fully in the development and implementation of the subbasin plan on the basis of the best available data. Determine whether other useful sources of data are available from the public. Convene a watershed conference that includes all parties with an interest in the subbasin plan development.
- Compile a list of all human and fiscal resources that are potentially available for protection and improvement of habitat. Include on the list all potential federal, state, local government, and other public sources as well as private sources such as local businesses that rely on natural resources in those watersheds. Coordinate this activity on a regional and state level, as appropriate.
- Provide for the involvement of volunteers and educational institutions in the implementation of projects.

The Commission's recommendation then included language on subbasin planning proposed in the Council's Strawman and then added these comments and recommendations:

- The Strawman states that subbasin plans should be coordinated with other regional subbasin planning efforts. It is unclear whether coordination will be mandated or left up to participant discretion. Further, it is unclear what will prevent planning efforts from being duplicated by other agencies. The inter-agency coordination efforts need to be more clearly spelled out so coordination is not up to the participant discretion. This paragraph says that “the Council aims to maximize coordination and cooperation and avoid duplication of these efforts” but does not suggest how this will be done.
- Proposed assessment method does not in any way explain how efforts will be coordinated with regulatory responsibilities. More direction is needed here as to how this will occur.
- The Strawman says that subbasin plans will be developed with participation of fish and wildlife managers in each subbasin. It does not specify who will develop these plans.
- Who will evaluate whether there has been enough participation by diverse interests in plan development? What consequences are there if groups who should be invited to participate are not?
- The program must more clearly describe who has the authority to submit the final subbasin plan, and who is responsible for doing so.

Finding: The Commission’s recommendation deals with four fundamental elements of subbasin planning: (1) planning versus immediate action; (2) minimum standards or base requirements; (3) coordination among participants and with other processes; and (4) the process for developing, submitting and reviewing plans for adoption. The Council adopted provisions that the Council concludes are consistent with the basic concepts and underlying substance of this recommendation, if more general.

First, the Council agreed that Bonneville funding for program activities should be on-going as subbasin planning is taking place, with the considerations and projects funded changing and adapting as assessments and plans are completed and plans adopted into the program. Also, the Council recognized that there may be some new “high priority” actions that could be funded immediately by Bonneville that do not require elaborate subbasin planning. Section X. The Council will expedite the scientific, public and Council review of these projects based on the criteria established in the program and make recommendations to Bonneville for funding. The Council finds these provisions consistent with the recommendation for important action on the ground to continue, under appropriate standards, in advance of longer-term planning.

Second, the Commission recommended minimum standards for subbasin plans. The Council established the minimum standards or base elements of a subbasin assessment and plan in provisions generally consistent with the recommendations. Sections V.A.1, A.3, A.4, A.5, Technical Appendix C. Many of the specific points recommended have been addressed in the subbasin assessment template developed by the Subbasin Assessment Template Science team (e.g. limiting factors, data requirements,) and in the discussion of what is to be included in the inventory of existing activities and the management plan sections of the subbasin plan. The Council sought to provide guidance on the standards and format for plans while remaining general enough to allow for the kind of flexibility and freedom necessary for participants to adapt the planning process to the varied circumstances they will encounter and to be able to accommodate what is learned through experience.

Third, the recommendation calls for coordination within the subbasin planning efforts and coordination with other similar or related efforts that are proceeding under other authorities. The Commission recommended that a “lead” entity be identified, and that the lead entity fulfill certain tasks. Several points speak to full participation by diverse groups interested in subbasin planning, and yet other points inquire as to who will determine if participation has been sufficiently broad. The Council included provisions in the program consistent with the recommendation that all interested parties be included, and

language recognizing the special consideration that the recommendations of the fish and wildlife agencies must be given for program recommendations. The Council concluded that “lead” entities can be identified on a case-by-case basis to fit best the particular dynamics of each subbasin, and that it was more important at this point for the Council to emphasize that it will be concerned with how state, tribal and federal input has been incorporated into subbasin plans as the Council reviews these plans pursuant to the standards in Section 4(h) of the Act.

With regard to the Commission’s concerns about who will determine if there has been sufficient participation in subbasin planning, the program’s answer is that ultimately the Council will make that determination. Again, subbasin plans will be developed and adopted into the program pursuant to the standards and procedures of Section 4(h) of the Act. As such, it is the Council that has the responsibility to decide whether or not to accept these subbasin level recommendations. Sections 4(h)(4) and 4(h)(5) individually and collectively require the Council to make broadly available, take comment on, and consult on recommendations to the program. Therefore, the Council will need to ensure that the public participation contemplated in those sections and in the program have been satisfied at some point in the planning process.

Source: Yakama Nation
Recommendation No. 24

Recommendation: The Yakama Nation recommended immediate funding of those projects deemed necessary by the Council to complete the ongoing assessment and planning process. This would include those elements of the Multi Species Framework project that need to be completed, additional EDT validation projects for tributary watersheds, the subbasin assessment project proposed by NMFS personnel, the habitat and ecological function project proposed by the Northwest Habitat Institute, and any other projects deemed necessary to put the perceived planning needs of this process to bed.

Finding: The Council agrees on the need for sufficient and timely funding of these tasks to bring the subbasin assessment and planning process to as early a conclusion as possible.

Source: National Marine Fisheries Service
Recommendation No. 54

Recommendation: The Fisheries Service recommended:

- It is crucial that subbasin assessment and subbasin planning occur rapidly. The Fisheries Service understands that a collaborative subbasin plan process could take a long time, yet also recognizes that there is a high risk of an ineffective plan if the entities that are key to implementation (local watershed groups, tribes, local land managers) do not participate in its development. Therefore, a facilitator and technical support should be provided for setting up subbasin plan teams. Specific time frames and default processes for developing recommendations should be determined and adhered to.
- Subbasin assessments and subbasin planning should be two efforts conducted by different (but closely related) groups.
- The Council should establish subbasin assessment teams that are comprised of specialists in biology, statistics and geographic information systems.

- Initiate Phase 2 of the amendment process (developing specific objectives and measures at the subbasin level) when subbasin assessments are complete. Recommendations for Phase 2 subbasin plan measures should be developed by entities based on findings from the subbasin assessment. The Fisheries Service's primary concern with early proposals by the Council for the subbasin plan process is that subbasin plans should be developed only after the findings of subbasin assessment have been communicated.
- The Council should facilitate the establishment of subbasin plan teams and recommendations. Representation on subbasin plan teams should vary, depending on the subbasin. Members should include representatives from the federal land management agencies, tribes, state agencies (including fish and wildlife, water quality, land use and water use agencies) and local watershed councils. The Council cannot assume or expect that the people and entities have the resources to facilitate and set up their own subbasin plans. Teams should be established and these teams should be supported and enabled to do the job. This enabling will require facilitation, technical resources and support, and outreach.
- Subbasin planning should include entities who are able to coordinate and understand both the subbasin and watershed scales and also entities with the ability to implement measures affecting non-federal land and water. ESA listings and the varied nature of efforts to stem these species' decline require a re-structuring of how the program is implemented. The federal, state and tribal fish and wildlife management entities have the expertise to advise on population and production objectives and production and harvest measures for the subbasins. However, for habitat actions, the fishery management entities are not necessarily the primary or appropriate entities to decide management actions to achieve those objectives. The fishery management entities are important participants in and technical resources for these decisions, but participation should also include local land and water management entities, and state and local governments and stakeholders. The re-structuring NMFS suggests is one that provides a principal role for these entities, in addition to a specific role for the fishery management entities.
- The first step of subbasin planning should be the transfer of subbasin assessment information, syntheses, and technology to the subbasin plan teams. Develop an explicit strategy for transferring syntheses and results of subbasin assessment to the subbasin planning teams and other interested entities. The transfer of findings from the subbasin assessments should be the first step not only to communicating science to managers and planners but also to outreach and understanding with the stakeholders in a subbasin. There should really be two efforts, one is technology transfer to subbasin planners, the other is outreach and information sharing to affected stakeholders.
- Subbasin plan teams will then develop specific recommendations for objectives and measures at the subbasin level. Responsibility for completing and transmitting subbasin plans should rest largely with the states and tribes with input from federal land management and regulatory agencies.
- Disputes are inevitable when so many interests are at stake. The Council should attempt to provide dispute resolution, but ultimately will have to decide on the final subbasin plan components.
- Fund the states and tribes for participating in developing, completing and implementing subbasin plans. Develop and fund an outreach strategy to inform, educate, involve and collaborate with affected stakeholders. A concerted effort to work with local governments, local communities and stakeholders can strongly influence the will of nonfederal land and water users to participate in the conservation effort.
- The Council should establish a subbasin planning and budgeting process that fully recognizes the coordination, monitoring and evaluation, and operation and maintenance need associated with effective implementation. Some subbasins might require the services of an "in-basin" coordinator to interface with local stakeholders and other state or federal programs. Some habitat

projects will require ongoing monitoring and evaluation activities to determine whether the expected benefits of the investment are being secured. Many habitat projects carry with them an ongoing operation and maintenance responsibility in order to continue to provide the intended benefits. All of these elements potentially have costs associated with them that must be considered in planning for and implementing projects within each watershed or subbasin.

- The Habitat Appendix to the All H paper developed by the Federal Caucus, outlined categories of costs associated with planning and implementation of habitat activities. There were six categories; 1) watershed planning and assessment, 2) subbasin planning and assessment, 3) subbasin and regional coordination, 4) implementation, 5) accountability (M&E) and, 6) operation and maintenance. Two scenarios of the potential annual and 15-year costs of a regional habitat program were estimated (the costs indicated were for a total habitat program irrespective of funding source). In initiating the subbasin planning process and in subsequently adopting subbasin plans into the fish and wildlife program, the Council should consider these categories and the funding implications they portend. NMFS recommends the Council allocate sufficient funding during Phase 1 of the subbasin planning process to fully fund the development of watershed and subbasin assessments.

Finding: The recommendation focuses on two issues: (1) the function and timing of subbasin assessments within the subbasin planning effort and (2) Council facilitation of subbasin planning efforts that allow for broad participation by affected entities. The Council adopted provisions consistent with the recommendation, if more general. Section V.

Regarding assessments, the program agrees that a fundamental part of any subbasin plan must be a technical, science-based subbasin assessment. That assessment should inform the objectives and strategies that are developed for the management plan and implementation sections of the subbasin plan. Section V.A.3, A.5. The Council adopted the subbasin assessment template developed by the Subbasin Assessment Science team as part of its Technical Appendix to the program. The provisions adopted in the program for the timing of subsequent phases of the program amendment process were crafted to allow for assessments to be completed prior to developing the management plan elements of subbasin plans, as is recommended. Sections V.A.1, A.3, A.5, VIII.4, Technical Appendix C.

The Council also adopted provisions calling for broad participation in the development of plans, with the expectation that people and entities with broad expertise and perspectives will choose to participate. The Council believes that the recommendation can be self-fulfilling in a significant way if the Fisheries Service and other agencies implementing the Endangered Species Act and the Clean Water Act participate in subbasin planning in a meaningful way. Section V.A.3, A.5, A.6. The Council cannot *mandate* participation by specific entities in the subbasin planning process and it did not attempt to do so in the program. Rather, it can only evaluate whether the plans presented to it for adoption meet the Power Act's standards for public participation and substance, noting the special role that the region's state, tribal and federal fish and wildlife managers have in program development.

Finally, the Council adopted provisions indicating it will seek to make resources available for assessment information transfer as well as subbasin planning coordination and facilitation consistent with the recommendation. The Council is continuing its discussions with state, tribal, local, and federal entities to determine what the facilitation and coordination needs are, and what methods may work best in the varied jurisdictions.

Source: Idaho Department of Fish and Game
Recommendation No. 36

Recommendation: Idaho noted that a schedule for subbasin planning that would have assessments completed by December 31, 2000, and plans submitted by April 1, 2001, was incredibly rigorous and that Idaho had inadequate resources to meet that schedule. As a solution, Idaho recommended hiring Subbasin Planning Coordinators. A coordinator for each subbasin would be hired as a temporary employee with either the relevant state fish and wildlife agency or an appropriate tribe, to increase managerial oversight, final product accountability, and overhead support. The coordinator should have a technical background in fish and wildlife management and have significant professional experience in planning, public involvement, and coordination. In more detail:

Scope of work/tasks: Subbasin Planning Coordinator

Each province will have a Coordinator who will be responsible for facilitating the subbasin planning effort through its entirety, including public involvement. The Coordinator's task will be to facilitate the planning and public involvement process, not represent one interest over the other. In Idaho, the Coordinator will equally represent the IDFG and all tribes involved in the subbasin.

Specific tasks may include the following:

- Compile existing information to write the subbasin assessment. The assessment will include information on focal fish and wildlife species and populations, habitat, and limiting factors.
- Use the subbasin assessment to coordinate and write the subbasin strategic plan. This plan will include long- and short-term priorities for fish and wildlife populations and habitats, strategies, and evaluation.
- Develop a three-year implementation plan. The implementation plan will include actions for populations and habitat, a monitoring and evaluation plan, and a budget.
- Throughout the process, coordinate state, tribal, and federal fish and wildlife managers.
- Throughout the process, coordinate land and water managers.
- Throughout the process, coordinate with stakeholders (public involvement).

Although each subbasin will have a plan, the planning process for all subbasins within a province will be concurrent. This approach makes sense in that subbasins are connected ecologically as well as ensuring that all subbasins will be finished for the rolling provincial review as a unit. It also is more efficient from a coordination perspective.

Finding: The schedule contemplated in the program for both assessments and subbasin planning is more deliberate than in earlier proposals to which this recommendation responded. See Sections V, VIII.4. The Council in general recognized the need for facilitation and other assistance in developing the subbasin plans. The Council did not adopt specific provisions for who to fund and how funding should be arranged for this purpose. These are specific funding items to work out with participants as the subbasin planning process is further developed and implemented.

Source: Bonneville Power Administration
Recommendation No. 37

Recommendation: Bonneville supported the Council's plan to support the fish and wildlife program with a set of standardized subbasin assessments and plans. Bonneville recommended:

- The process for subbasin assessments, plans and subsequent provincial project reviews should be coordinated with the federal plans for implementation of the off-site mitigation provisions of the recent hydrosystem biological opinions and recovery planning under the ESA.
- Planning across the basin must be done with a high level of uniformity. The assessment template needs to be developed and approved by all major state, federal, or tribal entities with a role in subbasin assessment.
- The subbasin assessment and planning process should remain dynamic and change as new information is developed that may lead to fresh approaches.
- Use existing subbasin plans where possible.

Finding: The Council adopted provisions consistent with the recommendation, calling for subbasin plans to be developed as expeditiously as is practical while ensuring a quality product, to build from existing assessment and plans where possible, to be responsive to changing circumstances and information, and to coordinate with and even integrate where possible ESA-based planning and implementation requirements from the hydrosystem biological opinions. Sections V.A.2-A.5, VIII.4.

The Council also adopted provisions consistent with this recommendation for a common assessment template to provide a significant level of uniformity and support for the assessments and to ensure that the management plan components of subbasin plans have a solid technical and scientific foundation. The Council did include in the Technical Appendix an assessment template developed and agreed to by major state, federal, and tribal entities. Sections V.A.3, A.5, Technical Appendix C..

Source: Washington Department of Ecology
Recommendation No. 6

Recommendation: The Department of Ecology recommended that to better coordinate subbasin planning with other efforts, the program should provide a financial incentive to proponents that coordinate with any already occurring local planning and data collecting efforts. Also, the Council should allow potentially important stakeholders beyond fish and wildlife managers to participate and be eligible to apply for funding for projects that affect water quantity and water quality when they demonstrate that these projects will have a positive impact on habitat.

Finding: The Council adopted provisions consistent with the substance of this recommendation. Sections V.A.3, A.4, A.5, A.6, VI.A. The Council did not adopt a specific “financial incentives” package as part of the program, but the Council did recognize the need to direct resources of various sorts to the subbasins to assist in the development of subbasin plans. The Council also included provisions calling for broad participation in the development of subbasin plans. People and entities other than the fish and wildlife managers are already eligible for project funding under the program for habitat and other projects that contribute to achieving the objectives of the program. The program further emphasizes this fact, in Section VI.A.1-3. The nature of the subbasin plans and of the subbasin planning development process could markedly increase the number of people who can more fully participate in the implementation of the fish and wildlife program.

Source: Public Utility District No. 1 of Chelan County
Recommendation No. 4

Recommendation: The Chelan PUD recommended that the program identify who is responsible for the development of the subbasin plans, who must agree to each subbasin plan, what happens to a subbasin plan in the event an agreement cannot be reached, when the development of the subbasin plan must be completed, and the consequence for failing to prepare a subbasin plan.

Subbasin plans should also provide an opportunity for the integration and coordination of projects and programs funded by others than Bonneville whenever feasible. And along with recognition of the ongoing efforts of state and local agencies in the development of watershed assessments and plans, the program should recognize and coordinate with relevant settlement agreements, habitat conservation plans, and biological opinions.

Finding: The Council adopted provisions partially consistent with this recommendation. Sections V, VI. First, subbasin plans are to be developed collectively by interested persons and entities in each subbasin. The Council declined to name a single entity to “lead” each subbasin plan development. Because subbasin plans will be adopted into the program, what most concerns the Council is making sure the subbasin plans reflect the Power Act’s standards for program development and for broad public participation. Sections V.A.5, A.6. But the Power Act’s program amendment process, which will be used to consider and adopt subbasin plans, is voluntary -- the Council cannot compel any party or entity to participate. Any attempt to “designate” entities to lead in the development of subbasin plans would be beyond the Council’s authority.

Second, the Council did not specify who must “agree” on a subbasin plan for it be adopted into the program. The Council will make the final decision based on the standards in the Power Act. The Council encouraged broad participation in the development of the plan, recognizing that subbasin plans will depend for their success in significant part on the support of people whose land and water activities will be affected in each subbasin. One of criteria the Council will consider in the public review of any recommended subbasin plan will be the degree of participation and support in the subbasin for the recommended plan. Rather than designating who must “agree” to a subbasin plan, the Council believes it is more effective to identify those who should participate; scrutinize recommended plans for evidence of broad participation and support; and make clear to planners that failure to produce a broadly supported plan for adoption could mean difficulty in securing Bonneville funding for activities in the subbasin.

The recommendation to coordinate Bonneville funded efforts with other fish and wildlife activities in subbasin plans was made in many recommendations, and was adopted by the Council. The program calls for the subbasin plan to identify, explain and in some fashion coordinate all activities implemented and funded in the subbasin. Section V.A.4, A.5. The Council has been advised by many entities providing recommendations and comments that all fish and wildlife activities in a subbasin need to be considered together to avoid conflicting goals and strategies.

5(c) Review of subbasin plans

Source:	Spokane Tribe
Recommendation No.	28
Source:	Colville Confederated Tribes
Recommendation No.	33
Source:	Burns-Paiute Tribe
Recommendation No.	34
Source:	Coeur d'Alene Tribe
Recommendation No.	42
Source:	Washington Department of Fish and Wildlife
Recommendation No.	43
Source:	Kalispel Tribe
Recommendation No.	48
Source:	Kootenai Tribe
Recommendation No.	50

Recommendation: These fish and wildlife agencies and tribes recommend versions of the following:

The Council's review procedures and standards are defined by the Power Act. As the plans for subbasins are completed, the Council should enter into a formal program amendment process to amend the plans into the fish and wildlife program.

The Council should seek comment on the draft subbasin plans from the public through hearings in each of the four states and through formal consultations between the Council and the affected tribes. The Council should then develop draft findings regarding whether or not the draft subbasin plans are consistent with the standards of the Power Act in Sections 4(h)(5) and (6). The Council should provide its findings in draft for public comment before amending the subbasin plans into the program. The subbasin teams should be given the opportunity to make revisions in the draft subbasin plans, as necessary, to respond to public or scientific comments, results of tribal consultations, and initial Council findings. If the Council finds that recommended plans fail to meet the Power Act standards, the Council must describe the inconsistencies in writing. Otherwise, the Council must amend the subbasin plans into the program.

To provide guidance in making its findings, the Council should adopt, as part of the program in this first phase, the regional goals and objectives, scientific principles and policies to define the Council's interpretation of the statutory standards of the Power Act. In particular, the Council must ensure that their rulemaking effort complements the existing and future activities of the federal and the region's state fish and wildlife agencies and appropriate tribes and that they remain consistent with the legal rights of appropriate Indian tribes in the region (Section 4(h)(6)).

Finding: In essence the recommendation is that the Council follow the substance and procedures in the Power Act for program amendments to evaluate and adopt subbasin plans. The Council will use the Power Act amendment process to call for, consider and adopt subbasin plans, as generally outlined in the program. Section V.A.1, A.6.

Many of the recommendations and the comments on the draft program called for the Council to engage in additional consultations with state, tribal, federal and private entities about the specifics of the process for subbasin plan development and adoption. The Council agrees that continued discussions on

these specifics should take place, and therefore, it chose not to adopt either the specific procedures recommended or any other. The Council will continue its discussions around the region to identify collaboratively the processes that will lead most effectively to the development and adoption of subbasin plans that meet the standards of the Power Act and the program.

Source: Oregon Department of Fish and Wildlife
Recommendation No. 26

Recommendation: Oregon recommended that the Council work with the fish and wildlife managers and others to design an independent peer review of draft subbasin plans to ensure that biological objectives and strategies are clearly stated and easily understood, are based on sound scientific principles, and are consistent with the policy and scientific framework. Draft subbasin plans should then be revised, as appropriate, based on the peer review.

Conduct a public review of subbasin plans after each has been peer reviewed and revised. If there are irreconcilable differences between the subbasin planners and the peer reviewers, the plan and peer review should be distributed for public review. The Council should adopt subbasin plans into the program under terms that will allow for updating the plans, as necessary, to reflect new knowledge.

Finding: The Council adopted provisions consistent with the recommendation, although it did not include the level of detail recommended. The program provides that subbasin plans proposed for adoption should be reviewed by independent scientists along the lines recommended. Section V.A.7. The Council anticipates consulting with state, tribal and federal fish and wildlife managers as well as others about the scope and process for that review, and about what process should be followed to respond to the review reports of the scientists. The program also provides for public review of subbasin plans proposed for adoption as recommended. Subbasin plans will be brought into the program through the amendment process of the Power Act, which includes substantial public notice and review provisions. Finally, the program provides for periodic review and revision of the plans to reflect new information and understanding. Section V.A.6.

Source: Montana Fish, Wildlife and Parks
Recommendation No. 31

Recommendation: Montana recommended that the Council take the lead in public review of the draft plans.

Finding: The Council adopted this recommendation. Subbasin plans are the embodiment of “recommendations” for “measures” and “objectives” for the subbasin level of the program. They will come to the Council through a formal program amendment process under the Power Act, including substantial public review, with a final decision about adoption into the program by the Council consistent with the substantive and procedural requirements of the Act.

Source: National Marine Fisheries Service
Recommendation No. 54

Recommendation: The Fisheries Service recommended that as part of the review of the subbasin plans, the Council should analyze whether the plan includes performance standards, performance measures and a monitoring strategy to measure progress toward those standards. The program should implement a tiered or nested approach to the development of performance measures, performance standards and monitoring. A monitoring strategy at the subbasin level and an explanation of the subbasin's role in basin-level monitoring should be provided.

Finding: The Council adopted this recommendation, using different terminology for some of the elements. The program requires each subbasin to contain objectives and a monitoring and evaluation plan that will assess progress towards meeting subbasin objectives. Sections III.D.9, V.A.5. Subbasin objectives are understood to include what NMFS has termed performance standards and performance measures.

As recommended, the program requires that both the objectives and an associated monitoring and evaluation program be part of a tiered approach from the individual project level to the subbasin and province/basin levels. Section III.C.2, C.4, D.9. V.5. The program emphasizes that monitoring and evaluation efforts at the broader scales are intended to ensure that actions being taken at the subbasin scale are achieving province- and basin scale objectives, an issue highlighted in the recommendation. The program recognizes that additional work is needed to establish a functioning basin-level monitoring and evaluation plan, and it calls on the assistance of other parties in the basin, certainly including the Fisheries Service, to help develop this plan.

Source: Public Utility District No. 1 of Chelan County
Recommendation No. 4

Recommendation: The Chelan PUD recommended that Council review of subbasin plans by an independent science panel should remain a discretionary requirement to avoid redundant scientific reviews.

Finding: The Council provided that it will use the expertise of independent scientists to review subbasin plans. Section V.A.7. Within that general guidance, there is the flexibility to ensure that the scientific reviews do not become an exercise in redundancy.

5(d) Specific subbasin plans/subbasin objectives/specific measures and actions

Source: Columbia River Inter-Tribal Fish Commission
Recommendation No. 40

Recommendation: The Commission submitted as an attachment to its main recommendations a set of subbasin goals and objectives for Columbia River Basin salmon and steelhead populations. Those goals and objectives were presented in a matrix, and consisted of a mixture of harvest, escapement, and production goals for each anadromous stock on a subbasin by subbasin basis. Goals and objectives drawn from the Tribal Recovery Plan, from existing subbasin plans, and from the work of Oregon and the Fisheries Service were presented as well. The Commission noted that in some subbasins, the goals and objectives identified by various entities are the same or very similar, but in many of the subbasins, the goals and objectives are inconsistent and/or incomplete. Consistent, complete goals and objectives need to be developed and agreed to for every salmon and steelhead population in every subbasin.

The Commission recommended that the inconsistencies and incomplete nature of subbasin goals and objectives be addressed in any process to update subbasin plans. Updating these goals and objectives will need to be coordinated at the basin-wide level to ensure consistency between subbasins. This coordination might occur in the *U.S. v Oregon* forum for anadromous fish as well as other appropriate forums for these and other species. In addition, it appears that in some instances the goals and objectives may not be achievable because of factors that occur outside of the subbasins, such as harvest, mainstem passage, and estuary/ocean survival. In these instances it might be useful to consider developing interim goals and objectives until factors outside the subbasins are appropriately addressed.

To assist in developing coordinated, complete goals and objectives the Commission recommended that a standard format be identified. This format should include objectives for production broodstock (natural and artificial production), tribal harvest, and non-tribal harvest. This format needs additional discussion and needs to be agreed to for all populations produced in all the subbasins basin-wide.

The Commission also recommended extensive, specific subbasin level measures and actions, including, but not limited to, Tables 1.C.1.1 (harvest measures); 1.C.2.2 (five dam drawdown actions); 1.C.3.1 (production measures); 1.C.4.1 (habitat measures); 1.C.5.1 (coordination, research, monitoring and evaluation measures).

Finding: The Council did not adopt or reject these recommendations. This phase of the amendment process was limited to recommendations for the basin and possibly province levels of the program. In its January 12, 2000 "Notice of Request for Recommendations to the Northwest Power Planning Council's Columbia River Basin Fish and Wildlife Program," the Council detailed the scope of this first phase of a comprehensive program amendment process as follows:

The Council is requesting recommendations for program amendments at the basin and province levels. The Council is therefore not requesting recommendations at this time for specific measures to be implemented in a particular subbasin. Following this reorganization of the program the Council intends to call for the region's Indian tribes and fish and wildlife agencies, and other interested parties, to recommend specific fish and wildlife plans for each of the subbasins for adoption into the fish and wildlife program. The Council anticipates that these plans will be prepared and adopted over a period of several years. In the current amendment proceedings, the Council will establish the general criteria for these plans. Any recommendations for measures or subbasin objectives received as part of the current amendment

process will be held over until the appropriate subbasin plan is considered for adoption into the fish and wildlife program, and will be taken up at that time. (See Council document 2000-1).

Thus as stated in the notice initiating this phase of the amendment proceeding, specific recommendations for subbasin goals, objectives and measures have been deferred to a subsequent amendment proceeding that will seek recommendations for specific, subbasin-level measures and objectives, to be adopted into the program as integrated subbasin plans. Sections V, VIII.4. The Council agrees with the Commission that the subbasin plans need to include complete and consistent goals and objectives.

Source: Confederated Tribes of the Warm Springs Reservation
Recommendation No. 21

Recommendation: The Confederated Tribes of the Warm Springs Reservation submitted the following specific program measures as part of their recommendation:

- Continue the Hood River Production Program (existing measure in program: 7.4L.2) and the corresponding Pelton Dam Fish Ladder production.
- Determine life distribution, abundance, life history patterns, cultural use patterns of Pacific Lamprey in the Deschutes and other subbasins within the CTWSRO ceded area.
- Continue water conservation/optimization projects in the John Day River Basin (existing measure in program: 7.8H.2) [labeled a high priority action “due to lethal water quality and quantity issues, listed stocks”]
- Habitat restoration on the Warm Springs Reservation, including road eradication, culvert improvement and replacement, riparian fencing and off- stream water developments for livestock, and riparian plantings.
- White River Terminal Fisheries Project: Develop and implement a terminal fisheries project for the Deschutes subbasin.
- Deschutes River Fall chinook salmon population estimation and monitoring.
- Bull trout life history evaluation (existing measure in program: 10.5A.2).
- Big Horn Sheep Reintroduction into historic habitat in the Mutton Mountains, near the northeastern corner of the Warm Springs Reservation.
- Other wildlife reintroductions: Evaluate the feasibility of reintroducing native wildlife species such as pronghorn and mountain quail into historic habitat on the Warm Springs Reservation. If feasible, develop and implement reintroduction programs.
- Land acquisitions: Identify and acquire key parcels of land for conservation purposes in the John Day subbasin, including spawning and rearing areas for spring chinook salmon, summer steelhead, bull trout, Pacific lamprey and other species including wildlife.

Finding: These specific recommendations for subbasin measures are deferred until the amendment proceedings for specific subbasin-level objectives and measures. See the findings above responding to the Commission’s recommendations.

Some of these recommendations relate to proposals for “High Priority” projects, as those types of projects were described in the Council’s letter of April 11, 2000, clarifying its original notice of request for recommendations (Council document 2000-1). Section X of the program adopted criteria and a procedure for a “High Priority” project initiative. That high priority project solicitation and review process, initiated in November 2000, will ultimately conclude in funding recommendations for specific

projects in specific subbasins, but those project funding recommendations will not be a part of the program revision process itself.

Source: Yakama Nation
Recommendation No. 24

Recommendation: The Yakama Nation recommended subbasin plans for:

- Okanogan River
- Methow River
- Entiat River
- Wenatchee River
- Yakima River
- Klickitat River
- Big White Salmon
- Little White Salmon
- Wind River

Finding: These subbasin plan recommendations are deferred until the amendment proceedings for specific subbasin-level objectives and measures, to be adopted then as integrated subbasin plans. See the findings above responding to the Commission's recommendations.

Source: Burns-Paiute Tribe
Recommendation No. 34

Recommendation: The Burns-Paiute Tribe recommended a subbasin plan for the Malheur River Basin, including a description of the subbasin, an overview of the fish, wildlife and habitat status; resident fish and wildlife policies, and goals and strategies.

Finding: These subbasin plan recommendations are deferred until the amendment proceedings for specific subbasin-level objectives and measures, to be adopted then as integrated subbasin plans. See the findings above responding to the Commission's recommendations.

Source: Kootenai Tribe
Recommendation No. 50

Recommendation: The Kootenai Tribe recommended a Kootenai subbasin plan, including a vision for the subbasin, a management framework, and a summary of goals, objectives, and present and future actions to be funded by Bonneville according to its trust responsibilities.

Finding: These subbasin plan recommendations are deferred until the amendment proceedings for specific subbasin-level objectives and measures, to be adopted then as integrated subbasin plans. See the findings above responding to the Commission's recommendations.

Source: Shoshone-Paiute Tribes
Recommendation No. 23

Recommendation: The Shoshone-Paiute Tribes recommended a subbasin plan for the Owyhee River and Bruneau River basins, including the management plan of the Shoshone-Paiute Tribes. The Council should ensure the Duck Valley Indian Reservation receives settlement for primary wildlife losses, as do eleven other tribes in the Columbia basin.

Finding: These subbasin plan recommendations are deferred until the amendment proceedings for specific subbasin-level objectives and measures, to be adopted then as integrated subbasin plans. See the findings above responding to the Commission's recommendations.

Source: U.S. Geological Survey and Confederated Tribes of the Colville Reservation
Recommendation No. 22

Recommendation: The Survey and Colville Tribes recommended that it is imperative that restoration activities in the Okanogan River basin include a solid understanding of the potential toxic effects of contaminants on anadromous salmonids and other components of the ecosystem that salmonids rely on.

Finding: This is a subbasin-specific recommendation, and is deferred until later phases of program amendment as discussed in findings above responsive to the Commission's recommendations. As is detailed in Section V.3, subbasin plans are required to contain a science-based subbasin assessment that will guide the development of objectives and strategies in each subbasin. If toxicity is a particular problem in the Okanogan subbasin, this should be identified in the subbasin assessment portion of the Okanogan subbasin plan.

6. Program implementation and management

6(a) Implementation roles

Source: Columbia River Inter-Tribal Fish Commission
Recommendation No. 40

Recommendation: The Commission recommended the following description of how the program should be implemented: The Council develops but does not implement the fish and wildlife program. With few exceptions, Bonneville does not implement the program, either. Instead, the Northwest Power Act directs Bonneville to use its “fund” -- its power revenues -- and other authorities to protect, mitigate and enhance fish and wildlife “in a manner consistent with” the Council’s program. Under this provision, Bonneville funds fish and wildlife projects and activities proposed by others -- primarily but not exclusively the state and federal fish and wildlife agencies and tribes and the federal project operating agencies -- to implement the program.

The co-managers also are actively involved in sponsoring projects for implementation with Bonneville funding. Sponsorship does not mean that the sponsoring entity will receive funding for project implementation. Instead, sponsorship generally reflects endorsement of the project by the co-manager and a willingness to develop project proposals and follow through with regard to information needed to complete reviews by other co-managers, scientific peers, and the Council.

In addition, the co-managers generally account for project implementation through development of project reports, in the event that the sponsoring entity is also the primary implementing entity. The co-managers coordinate projects with others including land and water managers, irrigation districts, and public interest groups to assist in obtaining necessary permits, cost shares, and environmental analyses. Co-managers occasionally assume title for physical facilities.

Finding: The Commission’s recommendation is more a basic statement of how it understands the roles and responsibilities in program implementation than a particular recommendation. The Council adopted provisions consistent with this assessment in describing how the program is to be implemented and managed and by whom. Section VI; *see also* Section VII.1 and .2. The Commission’s description says little about the Council’s role in implementation, especially project review and funding recommendations under Section 4(h)(10)(D) of the Power Act. The Council did not understand that to be a recommendation that the Council abrogate or modify its statutory duties.

Source: Oregon Department of Fish and Wildlife
Recommendation No. 26

Recommendation: Oregon recommended a description of program implementation similar to the Commission: The Council develops but does not implement the fish and wildlife program. With few exceptions, Bonneville does not implement the program, either. Instead, the Northwest Power Act directs Bonneville to use its “fund” -- its power revenues -- and other authorities to protect, mitigate and enhance fish and wildlife “in a manner consistent with” the Council’s program. Under this provision, Bonneville funds fish and wildlife projects and activities proposed by others -- primarily but not exclusively the state and federal fish and wildlife agencies and tribes and the federal project operating agencies -- to implement the program.

Finding: See the findings immediately above in response to the recommendation from the Commission.

Source: Yakama Nation
Recommendation No. 24

Recommendation: The Yakama Nation recommended the following reorganization of roles in program implementation: The old program recognized the CBFWA caucus approach to managing and allocating available resources. The three caucuses (anadromous fish, resident fish, and wildlife) were each allocated a proportionate share of the available budget to plan their annual work effort. While this approach may have been necessary in the earlier phases of the program, it has resulted in three different disciplines and thought processes all going in different directions at the same time. We need to make some drastic changes in this approach to ensure success over the next five years.

Reorganize the downriver caucuses into a watershed restoration team. Sub-groups, similar to the old caucus structure, will be a natural outgrowth of this process; however they will be ecologically and/or functionally oriented rather than by discipline. Some logical examples of sub-groups would be evaluation and monitoring, restoration methodology, hatchery technology, riparian and wetland management, habitat acquisition, research, mainstem flow operations. To be successful, the watershed restoration approach demands an integrated interdisciplinary team to address the problem. The expertise of the resident fisheries and wildlife ecologists must be married with that of the anadromous fisheries scientists and other disciplines in the new program. This approach is entirely consistent with the Council's new subbasin planning emphasis and will contribute a great deal of cost efficiency, accountability, and integrated thought process to the salmon recovery effort over the next five years.

We need to recognize that the needs of the upriver areas blocked from salmon are different than the needs of the downriver areas with salmon. We need to develop two separate but parallel processes for these vastly different situations. Upriver mitigation should be allowed to proceed with a greater degree of latitude for individual planning efforts specific to the unique characteristics of their hydropower losses. They should be allowed to follow the mitigation path of their choice and not necessarily be constrained to a strict watershed restoration philosophy more appropriate to the downriver areas.

Finding: Although the Council finds merit in the premise and rationale of the recommendation, the Council did not adopt a requirement that the fish and wildlife managers organize themselves in any particular way in their efforts to interact and fulfill their roles in program implementation. However, as the program shifts more and more to integrated subbasin plans, a rolling review of projects based on the ecological provinces, and an emphasis on watershed habitat restoration, it is possible that the fish and wildlife managers and CBFWA will find themselves re-organizing along the lines recommended here.

Source: Jim Middaugh
Recommendation No. 30

Recommendation: Mr. Middaugh recommended that while the proposed reforms to the program and the project selection process being considered by the Council are moving in the right direction, to address fully the region's common challenges, the Council must go beyond changing procedures by considering changes to the structure of the Council, CBFWA and Bonneville. The Council should create

new approaches to project planning, review, implementation and management that are more efficient and effective for everyone:

- Institutionalize CBFWA and its caucuses as the implementation arm of the fish and wildlife program within the Council.
- Redirect Council staff away from project review, implementation and management back toward supporting basinwide planning and policy development.
- Incorporate Bonneville contracting and management under the Council's administrative division.
- Use the savings to create a tribal liaison position at the Council and to provide funds to the tribal caucus for improved tribal coordination and participation at all levels of the program.

Finding: The Council did not adopt this recommendation, but it does believe the ideas and underlying concepts are worth considering in the next few years. The proposal to make CBFWA an implementation arm of the program and to shift contracting and management from Bonneville to the Council would take the support of the state, federal and tribal fish and wildlife managers and Bonneville, and that support is currently not there. Also, it is not clear how integrating the program implementation and management functions more into the Council than at present would in an of itself free the Council staff to focus more on planning and policy development and less on project review, implementation and management. The reverse could easily be the result.

6(b) Program funding

6(b)(i) Bonneville funding commitment

Source: Bonneville Power Administration
Recommendation No. 37

Recommendation: Bonneville noted that the Memorandum of Agreement covering Bonneville's fish and wildlife funding commitment for implementation of the Council's fish and wildlife program and the Federal Columbia River Power System (FCRPS) biological opinions will expire on September 30, 2001. Bonneville is committed to meeting its future fish and wildlife obligations once they have been established, including its trust and treaty responsibilities, as stated in the Fish and Wildlife Funding Principles that Vice President Gore announced in September 1998. Bonneville is committed to funding the Bonneville share of the Regional Plan, as identified through both the Council's program and the FCRPS biological opinions, and has positioned itself financially through the rate setting process to abide by that commitment. For those funds budgeted for repayment to the federal Treasury for Corps and Bureau capital improvements, a substantial amount remains unexpended due primarily to Congress' decision not to appropriate funds along the timeframe originally estimated when the MOA was established. As Bonneville committed in the fish budget MOA, Bonneville will keep any funds planned but unspent available for the benefit of fish and wildlife and will not reprogram them for non-fish and wildlife use.

Additional funding needs that arise prior to the expiration of the MOA for actions identified in the FCRPS Biological Opinion(s) for the protection of ESA-listed species, or for focused immediate actions to benefit fish and wildlife arising prior to the completion of a Regional Plan, are anticipated to be handled under existing MOA limits. Bonneville would look first to any unallocated funds in the direct program budget, second to any savings from completed projects through deobligations from their closed contracts, and finally, if necessary to reallocation between categories under the MOA. Bonneville believes, however, that an immediate focus upon reallocation under the MOA would shift the Region's attention away from the development of a sound Regional Plan, part of which includes the Council's efforts to establish a firm scientific basis, clear goals and measurable objectives for the fish and wildlife program.

Finding: Consistent with this recommendation, the Council adopted planning assumptions that Bonneville will make available sufficient funds to implement measures in the program in a timely fashion, Section III.A.2, and will fulfill the Fish and Wildlife Funding Principles adopted in September 1998, including the commitment to "meet all of its fish and wildlife obligations," Section VI.A.4. The Council hopes this can occur as part of implementing an integrated "Regional Plan" that includes all of the fish and wildlife activities that will be demanded of Bonneville. The Council designed the program as a possible vehicle for this integration. In any event, however, the Council assumes Bonneville will make available sufficient funds to implement the program to satisfy the protection and mitigation obligations of the Power Act, even if parts of Bonneville's obligations, such as specific ESA requirements, are not yet defined.

The Council did not adopt provisions specifically about additional funding needs or reallocations under the current funding Memorandum of Agreement, as that is about to expire and is not an appropriate subject for a long-term program. These matters should be governed under the terms of the MOA in discussions among the relevant parties.

Source:	Spokane Tribe
Recommendation No.	28
Source:	Montana Fish, Wildlife and Parks
Recommendation No.	31
Source:	Colville Confederated Tribes
Recommendation No.	33
Source:	Burns-Paiute Tribe
Recommendation No.	34
Source:	Shoshone-Bannock Tribes
Recommendation No.	38
Source:	Washington Department of Fish and Wildlife
Recommendation No.	43

Recommendation: These fish and wildlife agencies and tribes recommended that Bonneville make available sufficient funds to implement in a timely fashion the adopted subbasin plans, or subbasin summaries until subbasin plans are adopted.

Finding: The Council adopted these recommendations by adopting a planning assumption that Bonneville will make available sufficient funds to implement measures in the program in a timely fashion. Section III.A.2.

Source:	Spokane Tribe
Recommendation No.	28

Recommendation: The Spokane Tribe added to the above recommendation that all needs-based projects approved through the subbasin planning process should be funded. Bonneville’s fish and wildlife budget should be large enough to fund all measures approved and brought forward through the subbasin planning process, as Bonneville claims in its 2000 rate case to have set its rates and established its cost recovery mechanisms to cover all fish and wildlife cost contingencies over the next five years. If Bonneville’s budget is adequate to cover the basin’s needs, there should be no need to eliminate on budget grounds worthwhile projects that have gone through appropriate review and approval processes. If Bonneville does not keep its commitment to fund all needed fish and wildlife measures, the Spokane Tribe recommends that funding be prioritized to address the longstanding inequity in funding for the blocked areas, storage reservoirs and upper Columbia River province.

Finding: The Council adopted provisions consistent with this recommendation by adopting planning assumptions that Bonneville will make available sufficient funds to implement measures in the program in a timely fashion, Section III.A.2, and will fulfill the Fish and Wildlife Funding Principles adopted in September 1998, including the commitment to “meet all of its fish and wildlife obligations,” Section VI.A.4. Bonneville’s commitment in the 1998 Principles formed the basis for its rate case filing concerning fish and wildlife costs.

Source: Northwest Irrigation Utilities, Columbia-Snake River Irrigators Association, Eastern Oregon Irrigators Association
Recommendation No. 25

Recommendation: These irrigation interests said that their recommended “New Water Management Alternative for the Columbia River Basin,” which would restructure the existing flow targets/flow augmentation program, should produce additional power revenues from the federal hydroelectric power system beyond what would be produced under the current biological opinion regime. The additional revenues (estimated to be about \$40 million annually) or a significant portion of them should be allocated to developing new water management projects within the tributaries and watersheds. The funding should be made available to state agencies working with local stakeholder groups and the tribes specifically for the purpose of funding water management projects within tributaries and watersheds. In developing the new water resources projects, a portion of the power revenues from the restructured hydro regime shall be used to finance direct participation by the tribes. In effect, the tribes should become equity partners with the states and economic stakeholders in developing the new projects. The current economic costs of flow augmentation can be transformed into venture capital for the tribes to become equity partners.

Finding: The Council did not address this recommendation. It is subsidiary to and depends on the adoption of the recommended New Water Management Alternative, which concerns specific water management and operational measures that will be a subject for the subsequent mainstem plan amendment process. The Council does agree with the general principle that *if* future changes in flow and other hydrosystem operational measures for fish and wildlife result in substantial savings at Bonneville, that should improve Bonneville’s ability to fund tributary fish and wildlife habitat projects as off-site mitigation.

Source: Northwest Resource Information Center, Inc.
Recommendation No. 51

Recommendation: The Northwest Resource Information Center, Inc. stated that the deregulated market will replace at competitive prices the energy foregone by breaching the four lower Snake River dams. Therefore, there will be no impact on ratepayers from fulfilling the fish restoration requirements of the Power Act. However, there will be an impact on Bonneville’s revenues. This is because Bonneville for decades has been stealing the fishes’ water, and destroying local and regional Native American and non-Indian economies, to pay its nuclear power plant gambling debts. The Council should prescribe how Bonneville should obtain the revenue necessary to pay its nuclear power plant gambling debts without destroying Snake River anadromous fish and dependent economies at such time as the four lower Snake River dams are breached and Bonneville loses the revenue from that source.

Funding: The Council did not address this recommendation. It is subsidiary to and depends on the adoption of the recommendation to breach the four lower Snake River dams. Specific mainstem measures will be the subject of the subsequent mainstem plan amendment process. Whatever measures are adopted for mainstem hydrosystem operations for fish and wildlife, the Council will also have to be able to make a determination that the region will have an adequate, efficient, economical and reliable power supply.

6(b)(ii) Funding allocation principles and priorities

Source: National Marine Fisheries Service
Recommendation No. 54

Recommendation: The Fisheries Service recommended:

- Develop a priorities framework for funding decisions. The Phase 1 amendments should include a framework for decisions and resource allocations. Subbasin and watershed plans should provide the framework for priorities at the subbasin (across watersheds) and watershed (across sites) scales. The Council framework at the basin-level and province-level lacks a mechanism for determining how to prioritize efforts at the basin-level (across and among ecological provinces) and at the province level (across and among subbasins). The framework also lacks a mechanism for deciding priorities across classes of actions. NMFS understands this as a complex and difficult but necessary task. Some of the advantages of a priorities framework are that it could: provide objective and consistent criteria for allocating resources to actions that have a high likelihood of benefiting ESA-listed species; ensure that individual actions integrate into a synergistic set of actions; to integrate multiple program objectives and strategies.
- The Council should allocate appropriate funding to all components of the program including high priority actions, subbasin assessment, subbasin planning, research, monitoring and evaluation and outreach.
- The Council should establish a subbasin planning and budgeting process that fully recognizes the coordination, monitoring and evaluation, and operation and maintenance needs associated with effective implementation.

Funding: The Council did not adopt a budget priorities framework in this phase of the program revision process as recommended by the Fisheries Service. The Council stated a general set of funding principles and priorities, focused on Bonneville meeting all of its fish and wildlife obligations, as promised in the 1998 funding principles; on considering the degree of impact caused by the federally operated hydrosystem when determining provincial budget levels; and on maintaining the current level of support for the resident fish and wildlife programs pending a new budget allocation formula following subbasin planning. The Council agrees with the Fisheries Service that the revised program framework, grounded in subbasin planning framed by higher-level objectives, provides an overall basis for making budget allocation decisions, that the subbasin plans themselves should be the basis for allocating funding within the subbasins, and that the Council will need to state additional principles based in the basin-level and province-level objectives to provide more reasoned guidance for determining the appropriate budget levels for the subbasins and provinces. But the Council decided that a meaningful final determination of what should be the annual budget commitment as well as the appropriate basis for the allocation of the budget needs to be reserved for a later phase of the program amendment process, when the funding needs will be much better informed by the subbasin assessments, subbasin plans and whatever province-level and additional basin-level biological objectives have been established. Section VI.A.4.

Source: Yakama Nation
Recommendation No. 24

Recommendation: The Yakama Nation recommended that no project should be funded over the next five years that does not directly relate to a watershed function that leads to a restored ecosystem. The downriver watershed groups should be constrained from activities that do not bear directly on the restoration of healthy ecosystems that promote salmon and related indigenous species (e.g. lamprey,

sturgeon, etc.) recovery. This may seem harsh, as the Power Act clearly allows for other mitigation strategies. However, the region must devote all of its collective energies over the next five years to produce fish in the rivers or the program will wither and die and the salmon resource will be a thing of the past. The program should dedicate the next five years to acquiring by lease, purchase, or easement every acre on every salmon stream possible where the opportunity exists to reconnect a river with a missing normative ecosystem function. This is clearly an area where Bonneville must be encouraged to provide additional funds into the direct program, at least a \$50,000,000 per year effort over the next five years.

Funding: The Council did not require that only projects directly related to watershed functions be funded. As the Yakama Nation noted, the Power Act and thus the program has a broader mitigation responsibility and focus than just watershed restoration activities. The Council could not adopt the recommendation and be consistent with its legal obligations. On the other hand, the Council did adopt provisions consistent with this recommendation strongly emphasizing that this is to be a habitat-based program focused on protecting and restoring habitat conditions and ecological functions, calling for the establishment of a substantial land and water acquisition fund, and a high priority project initiative aimed at watershed habitat work.

Source:	Montana Fish, Wildlife and Parks
Recommendation No.	31
Source:	Colville Confederated Tribes
Recommendation No.	33
Source:	Burns-Paiute Tribe
Recommendation No.	34
Source:	Shoshone-Bannock Tribes
Recommendation No.	38
Source:	Washington Department of Fish and Wildlife
Recommendation No.	43

Recommendation: These fish and wildlife agencies and tribes recommended that the Council rely on the fish and wildlife managers for recommendations to the Council for how to divide the funds to implement adopted subbasin plans or subbasin summaries among the programmatic budget categories and among the subbasins. The Council should seek public comment on the recommendations and then adopt a budget allocation recommendation to guide subbasin planning and Bonneville funding decisions.

Finding: Consistent with this recommendation, the Council adopted provisions anticipating that the fish and wildlife managers will continue to play a significant part in developing draft annual implementation work plans, which is one source of recommendations for the allocation of the available funds. Section VI.A.2.c. The Council does not interpret this recommendation to mean that the fish and wildlife managers are to be the only source of recommendations for how to divide funds, nor that the way in which the fish and wildlife managers would derive their allocation recommendations would not be guided by principles and priorities stated in the program. Also, the Council did not include provisions that mandate or freeze any particular form for collective action by the fish and wildlife managers. As the program shifts more of its implementation emphasis to specific geographic areas, through subbasin planning and province-based, in depth project reviews, the Council and the fish and wildlife managers may need to review and reorganize how the fish and wildlife managers participate in project review and funding recommendations.

The Council is reserving until a later phase of the program amendment process the determination of what should be the annual budget commitment as well as the appropriate basis for the allocation of the

budget needs, when the funding needs will be much better informed by the subbasin assessments, subbasin plans and whatever province-level and additional basin-level biological objectives have been established. Section VI.A.4.

Source: Colville Confederated Tribes
Recommendation No. 33
Source: Spokane Tribe
Recommendation No. 28

Recommendation: The Colville Tribes recommended that when allocating funds to resident fish projects:

- Accord highest priority to rebuilding to sustainable levels weak, but recoverable, native populations injured by the hydropower system.
- Accord highest priority for resident fish in areas that previously had anadromous fish, but where anadromous fish access is now permanently blocked by federally operated or regulated hydropower development.

The Spokane Tribe similarly recommended that within resident fish projects, the program should continue to accord highest priority to rebuilding to sustainable levels weak, but recoverable, native populations injured by the hydropower system, when such populations are identified by the fishery managers; then to resident fish substitution measures in areas that previously had salmon and steelhead, but where anadromous fish are now blocked by federally operated hydropower development. Because these losses have endured mostly unmitigated for more than 50 years, and because in-kind mitigation cannot occur, the program should state that in any project ranking and selection process, projects satisfying these priorities be clearly distinguished from other projects. The distinction between these two highest priorities is a narrow one, applicable only to marginal choices among such projects.

Finding: The Council did not adopt the recommended statement of project funding priorities within resident fish projects, which would assign highest priority to projects intended to rebuild to sustainable levels weak but recoverable native populations and to resident fish substitution projects in the blocked areas. The Council included this project funding priority statement in the 1995 program, but decided not to retain it here. The Council maintained a general, across-the-program funding allocation that assures a significant portion of the fish and wildlife program funds will be used to address resident fish mitigation and substitution needs. Section VI.A.4. But specific funding allocations are to be determined based on the specific needs identified in subbasins and ecological provinces, consistent with the vision, biological objectives and strategies in the program.

Source: Spokane Tribe
Recommendation No. 28
Source: Coeur d'Alene Tribe
Recommendation No. 42
Source: Kalispel Tribe
Recommendation No. 48
Source: Kootenai Tribe
Recommendation No. 50

Recommendation: The Spokane Tribe recommended that the Council address the basin's longstanding inequity in mitigation and associated funding by placing a greater emphasis on and greater funding allocation for the fish and wildlife projects in the "blocked areas." Nearly 70 percent of all mitigation funding and projects in past programs have been concentrated within the mid-Columbia, lower Columbia and lower Snake River areas. Other areas of the region have suffered equal or greater hydropower losses to fish and wildlife. In particular, resident fish and wildlife mitigation has been sorely deficient in the upper Columbia storage reservoirs and their impacted areas, due to the program's historical imbalance in favor of lower basin anadromous fish runs. Both the biological losses and the cultural losses of the upper Columbia Tribes should be addressed more equitably with a greater emphasis on and greater funding allocation for the fish and wildlife projects needs in this area. If Bonneville does not keep its commitment to fund *all* needed fish and wildlife measures, the Spokane Tribe recommends that funding be prioritized to address the longstanding inequity in funding for the blocked areas, storage reservoirs and the upper Columbia River province.

The Coeur d'Alene Tribe similarly recommended that the Council adopt a program that makes a more substantive effort to protect, mitigate, and enhance resident fish and wildlife resources in a manner that is more comparable to the anadromous fish effort. The new program must not lose sight of the statutory obligation that the Power Act has established for mitigating and compensating impacts occurring in the upper Columbia River, as well as the other blocked areas of the Basin. It is imperative that the Council keep this in mind so that the new program does not become merely another anadromous fish recovery plan that fails to address upriver tribal and societal losses or one that chooses to address these resources as a "lower or secondary" priority. This principle must remain a very high priority in all decision making efforts, especially during resource allocation and accompanying prioritization efforts. The funding mechanisms within the existing program have continually failed to meet the protection, mitigation, and enhancement responsibilities in the upriver areas as well as Bonneville's trust obligations to the Coeur d'Alene Tribe.

These tribes then recommended the following funding allocation for the upper Columbia blocked area: The upper Columbia blocked area is the largest blocked area within the Basin. Considering the size and complexity of issues associated with the upper Columbia blocked area, the tribes recommended that a minimum of twenty percent or \$36 million, whichever is greater, of the direct program funds be allocated to the upper Columbia blocked area.

Finding: In the 1995 program amendments, the Council recognized that resident fish programs, including the substitution programs in the upper Columbia blocked area, had not been receiving sufficient resources. The Council thus adopted a provision recommending that not less than 15 percent of the Bonneville direct fish and wildlife budget be allocated to resident fish.

In this amendment process the Council concluded that the budget allocation provision had succeeded in bringing resources to an under-funded part of the program, and that the Council needed to continue to set a budget direction that made sure this part of the program received sufficient funding. The Council retained the provision that requires that at least a significant 15 percent portion of the budget go to resident fish. Sections III.C.2.a.2, VI.A.4. The Council concludes that this action is consistent in general with the substance of these recommendations. The Council did not adopt the specific budget allocation recommended for the upper Columbia blocked area. The Council concluded that a determination of the size and specific allocation of the direct program budget must be reserved for a later phase of the program amendment process when the project funding needs will be more greatly informed by subbasin planning. Section VI.A.4.

Source: Bonneville Power Administration
Recommendation No. 37

Recommendation: Bonneville noted that in the current situation Bonneville must increase its focus on listed species and their critical habitat. Bonneville expects its base program dollars to be increasingly focused on ESA-listed species -- resident fish, anadromous fish, and wildlife, in blocked areas, mainstem, tributaries and the estuary. Bonneville expects to increase direct program funding to support additional measures found in the biological opinions' reasonable and prudent alternatives, but it also expects that existing funding for habitat will be increasingly focused on ESA-listed species through the subbasin assessment and planning process. Consequently, the program should fund projects, such as supplementation project, only when they either aid a listed species by supplementing that species directly or by providing other fisheries so listed species harvest rates can be reduced.

Finding: The Council did not adopt the recommendation to restrict the types of projects eligible for funding under the program to those related to listed species alone. The Council concluded that this would be inconsistent with the purposes and provisions of the Power Act. The Council has the same expectation that Bonneville has -- in the next few years, Bonneville's funding for projects to assist listed species will increase and become a major portion of Bonneville's direct program expenditures for off-site mitigation under the Power Act. But Bonneville has the substantive obligation of the Power Act to protect, mitigate and enhance fish and wildlife adversely affected by the development and operation of the hydrosystem, whether or not those fish or wildlife are listed under the Endangered Species Act. The Council has the same obligation when it develops the program. Projects that meet that obligation -- that mitigate for adverse effects to an important but not-listed fish or wildlife population in one part of the basin -- are as important a part of Bonneville's off-site mitigation obligation as addressing a listed population in another part of the basin. One substantive legal obligation does not trump the other.

Source: PNUCC
Recommendation No. 55

Recommendation: PNUCC recommended that because there are competing demands for the region's limited financial and human resources, the Council establish biological priorities based on the degree to which proposed management actions contribute to the accomplishment of the vision. These biological priorities will ensure that tradeoff decisions are based on sound science and that they are economically rational and efficient. Those actions that have the greatest biological benefits at the lowest cost should be implemented first. The Council should then make funding decisions that allocate available resources to individual projects and watersheds according to the program's established biological priorities.

Finding: The Council adopted provisions consistent with this recommendation. This recommendation describes how the Council understands the purpose and function of the revised program framework. Setting specific biological priorities consistent with the vision and the basinwide biological objectives should be part of subsequent phases of the program revision process.

6(b)(iii) “In-lieu” funding

Source: Bonneville Power Administration
Recommendation No. 37

Recommendation: Bonneville noted that consistent with the Northwest Power Act, Bonneville is to use its fund to protect, mitigate, or enhance fish and wildlife to the extent affected by the development and operation of the federal Columbia River power system. Bonneville may do so as long as no other entity already has the authority or requirement pursuant to law or contract to make that expenditure. Power Act, §4(h)(10)(A). To ensure that projects recommended by the Council meet this legal standard, Bonneville proposes that between the project prioritization stage and Council’s approval stage, projects that may possibly violate the in-lieu funding prohibition be submitted to Bonneville for legal review. Bonneville would provide initial review within 10 days of a project’s submission. If Bonneville believes the project may violate the in lieu provision, Bonneville will provide a written explanation and work with the Council and the project proponent as needed to clarify the proposal and Bonneville’s decision. Types of proposals that might not meet the in-lieu criteria include: ecological assessments with scope beyond the Columbia Basin, mitigation for ecological impacts for which other federal or state government entities are responsible, habitat restoration activities which are part of a state or federal agency’s mission, and impacts caused by non-power Federal project users.

Finding: In describing the project selection process, the Council included a step in which Bonneville should review proposed projects and budgets “to ensure that regulatory needs, including compliance with applicable federal laws, are considered.” Section VI.A.3(4). A review of proposed projects for “in-lieu” concerns could be part of this review step, as recommended by Bonneville.

Source: Spokane Tribe
Recommendation No. 28
Source: Montana Fish, Wildlife and Parks
Recommendation No. 31
Source: Colville Confederated Tribes
Recommendation No. 33
Source: Idaho Department of Fish and Game
Recommendation No. 36

Recommendation: These fish and wildlife agencies and tribes recommended that the program should not impose on Bonneville the funding responsibilities of others, as prohibited by Section 4(h)(10)(A) of the Northwest Power Act.

Finding: This recommendation is a paraphrase of the “in lieu” funding prohibition in Section 4(h)(10)(A) of the Power Act. As with other legal obligations imposed by the Power Act, the Council did not see the need to repeat the specific provision in the program.

6(b)(iv) Funding for regional coordination

Source:	Spokane Tribe
Recommendation No.	28
Source:	Montana Fish, Wildlife and Parks
Recommendation No.	31
Source:	Colville Confederated Tribes
Recommendation No.	33
Source:	Burns-Paiute Tribe
Recommendation No.	34
Source:	Shoshone-Bannock Tribes
Recommendation No.	38
Source:	Coeur d'Alene Tribe
Recommendation No.	42
Source:	Washington Department of Fish and Wildlife
Recommendation No.	43
Source:	Kalispel Tribe
Recommendation No.	48
Source:	Kootenai Tribe
Recommendation No.	50

Recommendation: These fish and wildlife agencies and tribes recommended that Bonneville should make available to the managers funds for regional fish and wildlife management coordination. The objective of management coordination is to make timely, effective, and informed decisions regarding management of Columbia River fish and wildlife. This coordination would have two key aspects: (1) information management and (2) coordination of activities. The Spokane, Coeur d'Alene, Kootenai, Kalispel and Colville Tribes added that this funding for coordination should be "comparable to the funds available to the Council and Bonneville for regional fish and wildlife management coordination."

Finding: The program did not adopt any specific provisions for coordination funding as recommended. Implementation of the program has included making funds available to the fish and wildlife managers, directly and through CBFWA, to help coordinate fish and wildlife activities under the regional program. The amount of funding and the precise nature of the tasks funded should be defined in the project funding process.

6(c) Project review process

Source: Oregon Department of Fish and Wildlife
Recommendation No. 26

Recommendation: Oregon recommended that the annual project review required by the Power Act should be organized at the province level. The program should describe a sequence in which three or four of the eleven provinces will be reviewed during Fiscal Year 2001. Projects whose geographic scope includes more than one province, such as regional data management or research projects, should also be reviewed once every three years. For any particular area, this means review by the Independent Scientific Review Panel and Council funding recommendations covering three-year periods, rather than the single-year review and recommendations of the past.

The ISRP should review all projects proposed for the same subbasin together, using the subbasin plans to determine whether a proposed project addresses a critical management need and is consistent with the program. As part of its review, the ISRP should also meet with project sponsors and fish and wildlife managers to discuss projects and should visit project sites. Until subbasin plans are completed, the ISRP, Council, fish and wildlife managers, and project sponsors should work together to determine whether projects proposed for a particular subbasin implement the vision, biological objectives, and strategies established in the program and address critical management needs in the subbasin.

In summary, the general review process for a province should be as follows:

- the Council provides notice to the public that the fish and wildlife managers and ISRP will conduct a project review for a particular province;
- the Council solicits proposals for projects in subbasins included in the provincial review;
- when completed, the Council provides subbasin plans to the public, fish and wildlife managers, and ISRP for use in proposal preparation and the project review;
- proponents submit project proposals for consideration by the Council and review by the fish and wildlife managers and ISRP;
- the fish and wildlife managers and ISRP visit subbasins, receive presentations from project proponents, and discuss the proposals with project proponents;
- the fish and wildlife managers evaluate the management priority and technical merit of project proposals and submits their recommendations to the Council for projects to be funded by Bonneville;
- the ISRP evaluates the technical merit of project proposals and submits its evaluation to the Council;
- the Council conducts a public review of the fish and wildlife managers' recommendations and the ISRP's technical evaluation;
- the Council develops its draft recommendations for projects to be funded by Bonneville;
- the Council conducts a public review of its recommendations; and
- the Council submits its final recommendations to Bonneville.

To facilitate multi-year funding and contracting, the Council should require that projects identify specific objectives, tasks, deliverables, and costs. Bonneville and the Council should establish protocols to manage projects within their approved scope and funding authorizations or review projects, in a timely manner, when circumstances dictate a significant change in scope or funding needs. The Council and/or Bonneville should audit projects, as necessary to ensure that they are being managed within approved scope and funding authorizations.

Finding: The Council adopted provisions consistent with this recommendation. Sections VI.A.2-.3, A.6, III.D.9. One difference is that the program did not specify, as the recommendation did, that the fish and wildlife managers collectively conduct the project review for every province and collectively provide a priority assessment of the projects in any one area. The program recognizes the substantial role played by the fish and wildlife managers in sponsoring projects, reviewing projects and programs and providing recommendations, and providing a draft annual implementation work plan, and assumes that the substantive input of fish and wildlife agencies and tribes will continue to be part of the project review process. That may not always mean the fish and wildlife managers will collectively conduct the project review province in any particular area or that they will collectively pass on the projects in a particular subbasin or province. The Council described the parts of the process explicitly required by the statute; otherwise, precisely how the Council, Bonneville and the managers together decide to conduct the project review process could change over time.

Source: Washington Department of Fish and Wildlife
Recommendation No. 43

Recommendation: Washington recommended that the program have a clear description of a straightforward process by which the region makes decisions regarding fish and wildlife funding by Bonneville and other entities. This process must be based on existing legal authorities and spell out the roles of the involved parties. Once subbasin plans are adopted into the program, Bonneville should use the subbasin plans as the basis for funding fish and wildlife activities.

Finding: The Council adopted provisions consistent with this recommendation. Sections II.B-.D, V.A, VI.A.2-.3

Source: National Marine Fisheries Service
Recommendation No. 54

Recommendation: The Fisheries Service noted that the focus of the Council's review processes in the past has been on the merit of individual projects. With this amendment proceeding the Council should pursue development of broadly supported subbasin plans which will provide the context for specific mitigation and recovery actions within each subbasin. The program project review process should be based on subbasin planning. For the interim, where subbasin plans are not yet complete, rolling project review should utilize subbasin summaries and the high priority action criteria described below. The Independent Science Review Panel and the review process using the panel seem to be working well, and the Council should continue with it through project review and on into review of subbasin plans. In the event that high priority actions are identified through subbasin planning, recovery planning, or some other mechanism, the Council should develop an adaptive project review process so that high priority actions need not await the three-year rolling review process for review and funding approval.

Finding: The Council adopted provisions consistent with this recommendation. Sections II.B-.D, V.A, VI.A.2-.3, B.1, X.

Source: Columbia River Inter-Tribal Fish Commission
Recommendation No. 40

Recommendation: The Commission recommended that the annual project review required by the Power Act be administered at the province level. The program will describe a sequence in which three or four of the eleven provinces will be reviewed during Fiscal Year 2001. A separate group of projects that are systemwide in nature (or that at least transcend a single province), such as StreamNet or the smolt monitoring program, will always be reviewed once every three years. For any particular area, this means ISRP review and Council funding recommendations covering three-year periods, rather than the single-year review and recommendations of the past.

The nature of the review should shift once the subbasin plan program amendments are adopted. While the annual process will be *administered* by the Council at the province scale, the actual ISRP *project review* should focus at the subbasin scale. That is, the ISRP should review all of the projects proposed for a subbasin at the same time. Until the development of subbasin plans, the ISRP will evaluate whether projects proposed for a particular subbasin: (a) are based on sound science principles, (b) benefit fish and wildlife, and (c) have a clearly defined objective and outcome with provisions for monitoring and evaluation. Once subbasin plans are developed and adopted, including a demonstration that the subbasin plan implements the objectives at the basin and province levels, projects proposed for Bonneville funding would need to demonstrate to the Council in the rolling review that they are implementing those subbasin plans.

To facilitate multi-year funding and contracting, the Council will require projects to identify specific tasks, objectives, deliverables and associated costs. Bonneville and the Council will establish protocols to ensure that projects stay within their approved scope and funding authorizations. The Council and/or Bonneville may audit some or all of the projects annually to ensure that they are remaining within approved scope and funding authorizations.

In administering certain aspects of the Council's program, the co-managers have chosen to work through the processes of the Columbia Basin Fish and Wildlife Authority. Among other things, the co-managers develop an annual implementation workplan for activities in the Council's program. The workplan incorporates project priorities of the co-managers in terms of the available budget under the Bonneville fish and wildlife budget Memorandum of Agreement. Tasks necessary to carry out this work include:

- Assessment of current and future years' budget availability considering on-going and completed projects. The budget analysis primarily occurs at the "obligations" level of specificity, with monitoring of "accruals" through MOA processes.
- Budget recommendations for capital and expense portions of the Bonneville directly funded measures. Development of these recommendations generally requires review of individual project budgets for projects in question and decisions to sequence or delay implementation of measures.
- Recommendations of measures/program areas where proposals should be solicited for project implementation. These recommendations have been provided in an attempt to better structure the annual Bonneville funding cycle and streamline processes.
- Review of proposals submitted to Bonneville. Reviews include management review for consistency with federal, state, and tribal policies affecting the acceptability of proposals, independent peer review, and budget review. The quality of review is limited due to the volume of proposals and lack of clear delineation of responsibilities among major institutions.
- Peer review among co-managers of projects in certain subject matters areas, for example, predator control and dissolved gas monitoring.

- Implementation or coordination of major programmatic efforts such as predator control, smolt passage monitoring and coded wire tagging programs.

The 1996 amendment to the Power Act defined the scope of the ISRP's authority and duty by identifying the specific "determinations" that it shall make. The ISRP's scope of review is tied to discreet "projects" that have been submitted it by others, primarily the implementing managers. The language of the amendment, and the legislative history identifies a relatively limited role for the ISRP in the annual "program/project funding process."

The statutory scheme established the ISRP to act as "check" on the scientific principles serving as foundations for projects proposed for funding by the managers, and as a "balance" to ensure that the political and legal foundations for projects proposed for funding by the managers do not unreasonably eclipse the "science." This check and balance was created to remove any perception that a "conflict of interest" is inherent in a funding process that has those with jurisdiction to implement the projects "establishing the baseline."

The statute directs the ISRP to "review projects proposed to be funded" -- not to craft or to propose its own projects. In addition, the "list of prioritized project language" recognizes the existing "prioritization process" employed by the implementing managers. The notion that the ISRP has the legal authority to "set the baseline" by unilaterally developing projects is inconsistent with the fact that the ISRP must look at only a "sufficient number of projects" in making a consistency determination. The statute does not make the ISRP's input the centerpiece of the funding process.

Others in the region have taken exception to the position that the statute provides a limited role for the ISRP. They often confuse the tribes' efforts to point out what the ISRP is directed to do under the statute as an attempt to restrain what these scientists do, or may be asked to do, when they sit as the Independent Scientific Advisory Board (ISAB). It is possible that this confusion is a product of the considerable overlap of membership in the ISRP and ISAB. Also confusing the matter is the connection of the ISAB to the ISG, and its Return to the River exercise. The tribes believe that those who resist the more regimented role for the ISRP in the direct program funding process detailed in the amendment fail to recognize the distinctness of the ISRP, ISAB, and ISG and the apparent desire of the members on those panels to continue the ISG's "Return to the River" exercise. While the members may be the same, the purpose and charge of each of those "institutions" is very different.

The tribes' position that the ISRP acting under the amendment has a limited "check and balance" purpose, and their review standards are limited to those identified in the statute is not inconsistent with, and does not preclude, use of the ISRP and/or the ISAB to do more expansive review or analysis of fish and wildlife restoration in the basin. The tribes have supported this in the MOA Annex. If the scientists who constitute these bodies were able to spend more resources outside of the direct program box on "ISAB type" activities sanctioned by the region as contemplated in the MOA, their efforts would be more productive. This is the basis upon which the tribes have proposed the formation of a Columbia Basin Science Institute.

In summary, the role of the ISRP is limited when it acts under the amendment. If it is possible to agree that the ISRP has a limited role when acting pursuant to the amendment, it may be possible to develop both "criteria", and a more definitive ISRP project funding review process using the statutory language as the foundation. For example, "sound science principle determinations" may be made based upon application of the project to a known set of "criteria" (and so on for the other statutorily required "determinations"). A more definitive process would also alleviate actual or perceived inequality of treatment of certain project types, and may be a means to direct the review focus to key areas agreed upon by the relevant parties.

Finding: The Council adopted provisions consistent with the way this recommendation described the shift in the project review process to the rolling provincial review, the role of subbasin plans, the statutory standards for the ISRP's review, and the project information and review requirements that will facilitate multi-year funding and contracting and improved program management. Sections VI.A.2-3, A.6, III.D.9.

In addition, the program recognized that the fish and wildlife managers, through the Columbia Basin Fish and Wildlife Authority, currently develop a draft annual program implementation work plan from the projects proposed for funding. This draft annual work plan is the culmination of a technical and management review of proposed projects, and it proposes an annual budget and project priorities. The ISRP and the Council review the projects proposed for funding in the context of the managers' draft work plan. The Council anticipates that the fish and wildlife managers may continue to organize themselves and collectively provide these recommendations in the work plan to the Council. But the Council also stated that with the program's focus on subbasin plans as the guiding documents for program implementation, it will be critical that the fish and wildlife managers involve others in the subbasins -- stakeholders, land owners and managers, other state and federal agencies, and other interested parties -- in the development of draft work plans proposed for funding if the Council is to be able to continue using these work plan recommendations as the foundation for the Council's project recommendations. Section VI.A.2.c

Finally, the Council adopted provisions describing the Independent Scientific Review Panel, its statutory role and review standards, and the difference between the ISRP's function and the ISAB's. Sections VI.A.2.a, A.3, B. What the Council adopted is consistent with the substance of the Commission's recommendation concerning the ISRP, although the Council differs with the Commission's emphasis as to how "limited" that role is, and the Council recognizes that in certain situations, part of the ISRP's assessment as to whether a package of projects is consistent with the program may appropriately involve identifying gaps in program implementation and a recommendation that a new project be created to address the gap.

Source:	Spokane Tribe
Recommendation No.	28
Source:	Columbia River Inter-Tribal Fish Commission
Recommendation No.	40

Recommendation: The Spokane Tribe and the Commission recommended that the program make clear that the project review process applies not only to the Bonneville-funded direct program projects, but also to the reimbursables and capital expenditures, including the Corps' fish mitigation capital program and the reimbursable hatchery expenses incurred by the federal agencies. The sponsors of these projects, such as the Corps of Engineers and the Fish and Wildlife Service, will be asked to submit their projects for review in the appropriate province review and to relate their projects to the relevant vision, objectives and standards in the program and, where appropriate, to adopted subbasin plans.

Finding: The Council adopted provisions consistent with the recommendation. Sections VI.A.2, B.1.

Source: Spokane Tribe
Recommendation No. 28

Recommendation: The Spokane Tribe recommended that the Council’s fish and wildlife program constitute the major portion of Bonneville’s direct fish and wildlife budget. Only Bonneville’s own internal fish and wildlife management expenses and the fish and wildlife measures funded directly to the federal managers for ESA compliance should be outside the Council’s program review and budget, and even these expenses should be subjected to the same review process. In particular, the federal ESA activities should be subjected to the review process so that they and the program’s elements can be conformed to achieve maximum efficiency in species recovery.

Finding: This was more a recommendation to Bonneville for how it should use its fund for direct expenditures on fish and wildlife than a recommendation for the Council’s program. The Council disagrees with one premise in the recommendation -- that Bonneville’s direct expenditures for “ESA compliance” are “outside” of the program -- but agrees with the primary conclusion or recommendation that these projects should be part of the standard review process. Bonneville’s source of authority to use its fund for off-site mitigation to address fish and wildlife problems caused by the hydrosystem is based in Section 4(h) of the Power Act, and Bonneville must use this authority “in a manner consistent with the program.” Biological opinions that call for Bonneville to conduct its off-site mitigation programs in such a way as to help Bonneville avoid jeopardy to listed species are piggy-backing on and providing additional substantive standards and requirements for that off-site mitigation program. But any such activities are still based in the same off-site mitigation authority, which must be conducted in a manner consistent with the program. This makes the ESA compliance requirements for off-site mitigation part of program implementation, a process that also includes the project review requirements of Section 4(h)(10)(D).

Source: Bonneville Power Administration
Recommendation No. 37

Recommendation: Bonneville noted that in 1995, Bonneville and the Council agreed to establish a public process to recommend projects for funding by Bonneville. In 1996, the Secretaries of Energy, Commerce, Interior, and Army, on the behalf of Bonneville and involved federal agencies, and in consultation with the Council and the tribes, signed a Memorandum of Agreement (MOA) concerning Bonneville’s budget commitment to fish and wildlife funding. The MOA incorporated specific procedures for agency and tribal recommendations to the Council and the initiation of independent scientific review of project proposals. The Congress subsequently amended the Northwest Power Act to formalize the Council’s process for recommending projects for Bonneville funding and to require independent scientific review and public comment.

With this regional process in place, the Council and Bonneville have turned attention to improving the program’s standards for management and accounting of project investments. Following an independent review of the program’s management practices, Bonneville has initiated the adoption of specific policies and procedures for project implementation. The goal of these practices is to improve the fiscal accountability and reporting of program investments as well as to establish a base of analysis for reporting project spending and determining future needs.

These practices need to begin with the Council’s project selection process when projects are first proposed. They need to carry through the steps of budget approval, contracting, and progress reports and project completion. These practices need to be supported by regular regional review and decision making

and mechanisms to constructively air and resolve disputes. These proposed amendments are intended to incorporate improved financial management practices into the standards of the program.

The Council shall require project sponsors to propose projects for funding with separate budgets as appropriate for planning and design, construction and other implementation, monitoring and evaluation, and operation and maintenance. The work proposed in each of the phases should be defined by objectives with sufficient description of the associated tasks to define subsequent contract schedules and deliverables.

Prior to the beginning of each Fiscal Year, the Council shall recommend to Bonneville a specific budget for each project recommended for funding in the year. The Council's budget recommendations shall define separate budgets for the project phases defined by the project sponsors. The Council's start-of-year budget shall reconcile the use of funds committed to projects in previous budget but that remain unspent. The Council shall recommend whether such funds should remain available to the project budget or should be reallocated to other budget line items. The Council shall also define initial amounts to be maintained in any budget line items not allocated to specific projects. The Council shall define in its guidance letter the terms for allocating funds from these budget line items to specific projects during the fiscal year.

Bonneville shall review the Council's budget recommendations once adopted. Bonneville will notify the Council of any discrepancies in funds available to projects, either individually or in total. The Council and Bonneville shall schedule an initial review to discuss any such discrepancies or remaining questions about initial funding assumptions. The Council shall seek the recommendations of the fish and wildlife managers concerning these issues and then develop its own recommendations to Bonneville to resolve these issues.

Scientific review of projects by the Independent Scientific Review Panel since the inception of the fish and wildlife budget MOA has strengthened the credibility of projects recommended by the Council and funded by Bonneville. Continue rigorous review of the criteria for the selection of projects and the projects themselves, both early action and those reviewed on a rolling basis during the Council's project review process, to help ensure that the most sound, scientifically based projects are chosen for ratepayer funding. Projects recommended by USFWS and NMFS for ESA compliance by Bonneville may also be reviewed for their scientific merit prior to implementation.

The Council needs to include the opportunity for programmatic as well as site-specific project recommendations in the Fish and Wildlife program. Where programmatic actions are to be recommended the Council needs to establish the overall goal and objectives and approximate review schedules. For example, within the next 10 years Bonneville will fund the planning, coordination, implementation and monitoring and evaluation actions that will complete the human intervention actions needed to set the stage for the Trout Creek Watershed to be restored to a normative river condition. It is anticipated that significant time will be required after the last habitat improvements are complete for natural processes to restore the watershed to normative conditions. A programmatic recommendation has the advantages of:

- establishing realistic context, goals, and objectives
- ensuring, to the extent practicable, that all components of the watershed are addressed in a rigorous and equitable manner (e.g. a systematic approach to identifying and implementing a suite of actions)
- enhancing funding flexibility and the opportunity to maximize leverage of Bonneville dollars
- enhancing the opportunity for local involvement
- enhancing the potential to measurably contribute to recovery of threatened and endangered species

- enhancing the opportunity to minimize operation and maintenance costs
- enhancing the opportunity to develop and implement an effective and practicable M&E program

Finding: The Council generally agrees with Bonneville's description of how the Council and Bonneville understand the project review and budget recommendation process. The Council did not adopt these detailed provisions into the program, but the Council did adopt more general provisions that outline the process and expectations consistent with this recommendation, Section VI.A.2-.3, .6, Section III.D.9, and will provide more of the detail in Technical Appendix C. The Council agrees with Bonneville about the value of programmatic recommendations. The Council has provided programmatic recommendations -- often organized around topic areas such as artificial production -- as part of its annual project funding recommendations since the current procedure began. With the re-organization of the program and the project review process focused on provinces and subbasins, biological objectives, and integrated subbasin plans, the potential increases for programmatic recommendations that integrate planning, on-the-ground activities extended over time, and monitoring and evaluation.

6(d) Program and project management

6(d)(i) Bonneville project contracting

Source: Bonneville Power Administration
Recommendation No. 37

Recommendation: Bonneville noted that its staff, in coordination with the Columbia Basin Fish and Wildlife Authority (CBFWA), the Council, and others, has been developing draft policies and procedures for overall management of Bonneville-funded fish and wildlife projects. Bonneville has specifically focused on improving the contracting, tracking, reporting for results, budgeting and invoicing by task, and overall data management for fish and wildlife expenditures of ratepayer funds. Once these policies and procedures have been completely developed and shared, Bonneville will require full support from the Council and the Columbia River stakeholders to begin implementation of all Bonneville-funded fish and wildlife contracts consistent with these standards.

Bonneville recommended that the program acknowledge that Bonneville retains full authority for the selection of project contractors, establishing final budget obligations for projects, and setting terms and conditions for contract performance. In turn, Bonneville shall promptly notify the Council where proposed budgets or scopes of performance are significantly different from what was defined in the project selection process and the final Council recommended budget. Bonneville shall seek Council concurrence for committing funds to projects in excess of ten percent of the recommended project budget. In all such instances, the Council shall seek the recommendations of the fish and wildlife managers before making its own recommendations to Bonneville.

Bonneville may, from time to time, have reasons to propose an alternative contract to implement recommended projects. These reasons may be grounded in past performance of the intended contractor or the ability of the project sponsor to manage and account for project funds consistently with the practices defined in the program. In such instances, Bonneville will notify the Council of the reasons for such alternative implementation mechanisms and of its decision on how to proceed with contracting for project implementation.

Finding: The Council adopted provisions consistent with this recommendation, if more general. Section VI.A.6. Much of this recommendation is a description as to how Bonneville understands its functions and responsibilities and how Bonneville intends to act in program management. The Council agrees with that description, but did not see the need to add that description to the program itself.

Source: Columbia River Inter-Tribal Fish Commission
Recommendation No. 40

Recommendation: The Commission recommended that the Council retain Section 3.1C in the current program describing how Bonneville will contract and fund projects recommended by the Council to implement the program.

Finding: The Council did not retain section 3.1C. Part of what was in Section 3.1C has been superseded by the project review process described in Section VI.A.2-.4, developed in response to the 1996 Power Act amendment and the 1996 Bonneville fish and wildlife budget memorandum of agreement. Other parts of Section 3.1C are statements of project management and contracting that are

largely common sense descriptions that flow from the roles and responsibilities assigned to various entities in the Power Act and elsewhere. The Council does not disagree with these provisions, but it also decided on a consistent and fairly general level of detail for the basinwide principles and policies in the revised program. So, the Council adopted a few general but key strategies on project management, Section VI.A.6, that are not inconsistent with the old provisions of Section 3.1C. The Council will also describe additional details on how project management and contracting occurs under the program, in language that is part of the non-binding Technical Appendix C.

Source:	Spokane Tribe
Recommendation No.	28
Source:	Colville Confederated Tribes
Recommendation No.	33
Source:	Burns-Paiute Tribe
Recommendation No.	34
Source:	Shoshone-Bannock Tribes
Recommendation No.	38
Source:	Coeur d'Alene Tribe
Recommendation No.	42
Source:	Washington Department of Fish and Wildlife
Recommendation No.	43
Source:	Kalispel Tribe
Recommendation No.	48
Source:	Kootenai Tribe
Recommendation No.	50

Recommendation: These agencies and tribes recommended that Bonneville contract with the appropriate entities to implement the actions in the subbasin plans when those plans become part of the program. These projects should have a three-year scope-of-work and budget that follow the actions and budgets in the three-year implementation plans. Bonneville will review and renew the scope-of-work and budget annually.

Finding: The Council adopted provisions for subbasin planning, project review and project management consistent with these recommendations. Section V.A.1, V.A.5, VI.A.2, A.3, A.6.

Source:	Yakama Nation
Recommendation No.	24

Recommendation: The Yakama Nation recommended that many of the current programmatic functions would achieve great cost efficiencies and savings if multi-year front-loaded contracting were implemented. The current system of annual project solicitations and monthly cost reimbursable contracting generates excessive administrative costs in terms of both personnel time and paperwork processing requirements. Most importantly, the system's contract modification procedure is not flexible enough to accommodate timely changes in management functions that may occur on a normal basis throughout any given year. The Yakama Nation's Wetland and Riparian Restoration project is currently being recognized by Bonneville as a pilot project to test the project efficiencies and cost savings resulting from front-loaded contracting. This project was chosen by Bonneville because of its existing approved long-term management plan that clearly details annual project activities. As the program moves forward

into subbasin plans that detail every activity over a multi-year time frame, i.e. providing a multi-year work plan, Bonneville should adopt a multi-year front-loaded contracting approach to facilitate this process. This change in contracting procedure will result in huge cost savings complemented with operational efficiencies over the life of a project. The current Yakama Nation pilot project has demonstrated the positive results that can be realized with this approach.

Finding: The Council adopted provisions that will allow for multi-year funding and flexible and responsive contract management. The Council did not adopt provisions calling for front-loaded contracting, but did not adopt provisions opposing that process, either. This is a contracting matter largely within the management discretion of Bonneville and part of the on-going program management and implementation work of Bonneville in consultation with the Council and the project sponsors.

6(d)(ii) Project performance, financial and program reporting

Source: Bonneville Power Administration
Recommendation No. 37

Recommendation: Bonneville recommended that Bonneville define terms and conditions for project contracts that support timely and complete reporting by contractors of expenditures and progress towards defined project objectives. These requirements should ensure that project sponsors report expenditures and progress in enough detail to monitor performance of the specific tasks and objectives identified in the original project proposal as forwarded from the Council.

Bonneville shall maintain and improve dissemination of project performance and expenditure reports. The goal should be to make reports from project sponsors available on the World Wide Web as soon as possible after reports are received.

Bonneville shall ensure that project budget obligations are reconciled annually. This reconciliation shall include accounting by the project contractors of the actual expenditures by task of funds obligated to the project and a timely final billing for the year's work. The sponsor shall specifically identify any tasks remaining uncompleted that should be incorporated into the scope of work for the following year. Bonneville shall recommend the incorporation of such work with funds available to be "carried over" into the next fiscal year.

Plans and accomplishments of the program are to be reviewed every three to five years to ensure program consistency and orientation. Overall budgetary consistency is reviewed annually.

The Council needs to include the opportunity for programmatic as well as site-specific project recommendations in the fish and wildlife program. Where programmatic actions are to be recommended the Council needs to establish the overall goal and objectives and approximate review schedules. For example, within the next 10 years Bonneville will fund the planning, coordination, implementation and monitoring and evaluation actions that will complete the human intervention actions needed to set the stage for the Trout Creek Watershed to be restored to a normative river condition. It is anticipated that significant time will be required after the last habitat improvements are complete for natural processes to restore the watershed to normative conditions.

It is expected that Bonneville will use the model/focus watershed template developed regionally and agreed to by NMFS and the Council for consistency of data collection and analysis among basins. We also recognize the importance of ensuring local tribal, private, state, county and municipal involvement and participation in this program as well as including the participation of other federal agencies in this program. Further, it is expected that plans and accomplishments of the program are to be reviewed every three to five years to ensure program consistency and orientation. Budgetary consistency is reviewed annually.

Finding: The Council adopted provisions consistent with this recommendation, if more general. See Sections III.A.2, D.2, D.3, D.9, V, VI.A.5, A.6.

Source: Oregon Department of Fish and Wildlife
Recommendation No. 26

Recommendation: Oregon recommended that to facilitate multi-year funding and contracting, the Council should require that projects identify specific objectives, tasks, deliverables, and costs. Bonneville and the Council should establish protocols to manage projects within their approved scope and funding authorizations or review projects, in a timely manner, when circumstances dictate a significant change in scope or funding needs. The Council and/or Bonneville should audit projects as necessary to ensure that they are being managed within approved scope and funding authorizations.

Finding: The Council adopted provisions consistent with this recommendation. Section VI.A.6.

Source: Spokane Tribe
Recommendation No. 28

Source: Colville Confederated Tribes
Recommendation No. 33

Source: Burns-Paiute Tribe
Recommendation No. 34

Source: Shoshone-Bannock Tribes
Recommendation No. 38

Source: Coeur d'Alene Tribe
Recommendation No. 42

Source: Washington Department of Fish and Wildlife
Recommendation No. 43

Source: Kalispel Tribe
Recommendation No. 48

Source: Kootenai Tribe
Recommendation No. 50

Recommendation: These agencies and tribes recommended that CBFWA annually evaluate the results from projects and compile a report on program accomplishments. The project results will also be used by the core members of the subbasin teams to update and improve the subbasin plans as necessary prior to their Council review every three years.

Finding: The Council adopted provisions consistent with these recommendations, but did not assign or limit the annual evaluation specifically to CBFWA. The program calls for regular reporting of project monitoring and evaluation results, Sections III.D.9, VI.A.6, for monitoring and evaluation of results as part of subbasin plans, to be used to help update plans as needed, Sections III.D.9, V.A.1, A.5, and for Bonneville and the fish and wildlife managers to work with the Council on an annual report on the program, Section VI.A.7. The Council also called for the further development, with the fish and wildlife managers and others, of a program-level monitoring and evaluation plan, Section III.D.9.

Source: Washington Department of Fish and Wildlife
Recommendation No. 43

Recommendation: Washington recommended that the Council produce an annual report that inventories total expenditures of all programs in each of the 4-H areas in each subbasin and identifies basin-wide issues that, through better coordination, could accelerate fish and wildlife restoration.

Finding: The Council adopted provisions consistent with this recommendation. Section VI.A.7.

Source: Hiram Li -- Oregon Cooperative Fish and Wildlife Research Unit
Recommendation No. 16

Recommendation: Mr. Li recommended that management/research groups be required to publish the results of their management activities. If a group is not getting the job done or has no time for analysis, that speaks of failure and their activities should be phased out.

Finding: The Council adopted provisions calling for the reporting and wide dissemination of management and research results. Sections III.D.9, VI.A.6.

6(e) Coordination of activities within the program and with other programs

Source: National Marine Fisheries Service
Recommendation No. 54

Recommendation: The Fisheries Service recommended:

Coordination with federal and non-federal budget processes:

The Council should explore ways to coordinate program funding with federal and other non-federal budget processes. There are several active and potential federal and non-federal funding programs for salmonid conservation in the Columbia Basin, including USDA programs managed by the U.S. Forest Service, Natural Resources Conservation Service, and Farm Services Administration, the Environmental Protection Agency and numerous state programs. To be most effective at the basin level and the most user-friendly at the watershed level, these programs should be coordinated. Presently, they are typically implemented as independent programs.

Coordination of Council's province- and subbasin-level planning with ESA recovery planning:

The Council's program should address recovery needs for threatened and endangered salmon and steelhead to the greatest extent possible. Develop province-level visions and objectives that incorporate de-listing criteria for ESUs, complementing or coordinated with NMFS Recovery Planning process:

Under the Endangered Species Act, NMFS is responsible for developing detailed recovery plans for each ESU. NMFS intends to carry out this task in cooperation with other federal agencies, states, tribes and stakeholders and has already begun formal recovery planning for the upper Willamette and lower Columbia ESUs. Recovery plans set biological recovery goals (or de-listing criteria) and the specific actions needed to achieve those goals. The ESA also requires that recovery plans include an estimate of the cost of needed actions. NMFS has focused its efforts first on the technical tasks involved in recovery planning for salmon and steelhead. Completion of these tasks will aid planners in identifying and prioritizing actions that will provide the greatest returns.

The first technical task is to identify the populations that make up the ESU and describe the characteristics that would allow us to conclude the populations are viable. The characteristics include abundance, spatial structure and diversity across the whole ESU and within populations that comprise the ESU, minimum trends and productivity. The proposed methods for this technical task are described in a draft paper titled Viable Salmonid Populations and the Recovery of Evolutionarily Significant Units (ESUs), distributed in December, 1999. NMFS is referring to this method as VSP. Once populations are identified and described in this way, it is possible to construct different scenarios for recovery of the ESU in terms of number of populations, in what distribution and what level of abundance and productivity. It is likely that some populations will be identified as core populations, important to preserve regardless of the scenario chosen. The importance of other populations to overall recovery will vary across scenarios, but some of them at least will be needed in any scenario.

Another technical task is to identify factors limiting recovery. These factors are likely to differ among ESUs (for example, upriver ESUs will be more affected by hydropower operations than most lower river ESU. They may even differ among populations within an ESU (for example, a dam may block access to habitat for one population in an ESU, while urban development may be limiting the recovery of another). Technical experts can also assess habitat characteristics throughout the range of an ESU and identify those habitats that represent productive strongholds and those that could be strongholds if targeted for restoration.

In its formal recovery planning process in the upper Willamette and lower Columbia region, NMFS has appointed a Technical Recovery Team (TRT) and charged it with completing these technical tasks. In the upper Columbia, a NMFS-led science team worked with the mid-Columbia Public Utility Districts to begin the first two recovery tasks (identifying populations and abundance recovery goals for them). The Council's proposal to conduct subbasin assessments throughout the basin, could accomplish the technical task of assessing habitat.

With these processes in place, the task will still remain to set biological recovery goals for ESUs in the Snake River and for steelhead in the mid-Columbia region. NMFS is working with the Federal agencies, states, tribes, the Council and others to determine how best to accomplish this task.

Completion of these technical tasks throughout the basin will provide much of the information needed to develop a plan of action that will lead to recovery. NMFS recognizes that there are already a number of state and local processes in place working on local recovery plans. As it moves forward to develop recovery plans using this technical information, NMFS intends to rely on existing processes and institutions. The subbasin assessment and planning process proposed by the Council may well provide the organization and include the stakeholders in the interior Columbia basin that would enable NMFS to rely on this process to develop recovery plans. Subbasin plans would need to be "aggregated" to ensure they will provide for the recovery of the entire ESU. The Council's program is in a good position for this since the delineations of ecological provinces evaluated by the Council's framework are very close to the geographic delineations of ESUs. NMFS will continue to discuss these issues with all of the affected entities in the Basin. If appropriate, NMFS stands ready to appoint formal recovery teams to develop comprehensive plans for the listed ESUs.

Coordination with Biological Opinion actions and processes:

The details of how the action agencies will interface with the Council process in the development of their ESA implementation plans will not be prescribed in the 2000 FCRPS biological opinion, and additional discussion will be necessary once the biological opinion is released. The draft reasonable and prudent alternatives currently call for the action agencies to annually develop one and five-year implementation plans and associated budgets for activities they intend to undertake to meet the performance standards and objectives for listed species. NMFS intends that current regional planning processes be used to the maximum extent practicable to develop and coordinate these one and five-year plans. The Council should work with the action agencies (the Bonneville Power Administration, the Corps of Engineers, and the Bureau of Reclamation), NMFS, and the Fish and Wildlife Service to design the most efficient process to develop and integrate the Action Agencies' one and five-year ESA implementation plans with plans being developed under the program. Further, we recommend that the Council's final amendment reflect those understandings and/or agreements.

Once the implementation plans and their associated budgets are developed by the action agencies, NMFS and the USFWS will review them for consistency with the 2000 FCRPS biological opinion. Approved plans are expected to be implemented by the action agencies in their entirety, unless there are technical or feasibility impediments that cannot be reconciled or appropriations are not forthcoming from Congress.

With regard to hydro operations, NMFS will continue to use the "Regional Forum" structure established under the 1995-2000 FCRPS Biological Opinion to develop and review an annual water management plan, address real time operations, and to plan for and prioritize system fish passage needs, including operation and maintenance of those fish facilities. The Regional Forum is open to and encourages participation by the states, tribes, federal agencies, and others, including the Council.

Finding: The Council adopted provisions consistent with this recommendation, if more general, calling (a) for coordination and in some case joint sponsorship on annual and in-season hydrosystem operations and (b) for coordination and, where possible, integration of ESA requirements into subbasin planning, the establishment of subbasin and province-level objectives, and project review, funding recommendations and program budgets. Sections II.C, III.B.1, D.6, V.A.1, A.3-.6, VI.A, A.2-.5.

Source: Washington Department of Fish and Wildlife

Recommendation No. 43

Source: Washington Governor's Joint Natural Resources Cabinet

Recommendation No. 44

Recommendation: Washington recommended systematic coordination between the Council's fish and wildlife program and state-level salmon recovery efforts, both on the ground and at the policy level, as one of the larger challenges facing the region. Washington is concerned that unless there is coordination, there will be major confusion among local governments, citizens and tribes. In some cases of overlap, the state fish and wildlife managers will perform the necessary coordination role, on behalf of both the states and the Council. However, in other cases, the coordination roles have to be assumed by the state government as whole, organized through the Governor's office, and not a single agency. Washington encouraged the Council to work with the Governor's natural resources cabinet, which includes the Washington Department of Fish and Wildlife, in order to ensure that there is meaningful coordination between the Council's fish and wildlife program and the state's salmon recovery strategy. The Council has a responsibility to provide outreach and coordination efforts beyond the current efforts directed at fish and wildlife managers. The current Columbia Basin Forum does not meet this need, although it may provide an informal venue for development of solutions to this problem.

Washington also recommended that the Council meet further with state governments during the program development process to develop stronger linkages. The current Washington state "Balanced Scorecard" system for monitoring and reporting progress on salmon recovery actions provides an excellent example of a state-level process that must be supported by Council actions.

Initiate a program tracking coordination function to maintain a current inventory and description of all Council, federal, state, tribal, local and private fish and wildlife management programs in the Columbia Basin. This should also provide a clearinghouse function, providing advice and direction for fish and wildlife proposals to the various federal, regional, state, tribal and local agencies with funding responsibilities.

When establishing priorities, the fish and wildlife program should consider its projects within the context of the total efforts of all restoration programs. The program should focus efforts on providing those actions and functions that coordinate and enhance the effectiveness of other, less flexible, fish and wildlife restoration programs.

Finding: The Council adopted provisions committed to coordinating the fish and wildlife program activities with state salmon recovery and other fish and wildlife planning and implementation activities. It is the Council's position and assumption that the subbasin planning process, the centerpiece of the program for specific planning and implementation for off-site mitigation, will in fact build on and not ignore or duplicate the watershed planning and implementation efforts underway in the states. The state fish and wildlife agencies have a special role in the program under the Power Act, but the Council also recognizes that the nature and scale of fish and wildlife recovery in the tributaries implicates and requires the full participation of and coordination with state agencies and affected private entities well

beyond the fish and wildlife managers. Continued consultation and coordination with the state agencies and governors' offices will be critical as the Council continues the process of revising the program and incorporating subbasin plans. Sections II.C, V.A, A.2-.6, VI.A, A.5.

Source: Columbia River Inter-Tribal Fish Commission
Recommendation No. 40

Recommendation: The Commission recommended the following policies and strategies on coordination of the program activities within the program and with other fish and wildlife efforts and obligations in the basin:

Restoration funding under the Council's program should address in part the needs identified under the Endangered Species Act, the Clean Water Act, and the tribes' treaty rights. Achievement of the goals embodied by these federal legal obligations can only be met within the context of coordinated regional planning and funding. The goals will be achieved only within the principles identified in the framework, that is, with management and restoration of fish habitat flowing from a broader management of the watersheds that create the environmental template for that habitat.

Coordinated implementation, research, monitoring, and evaluation are accepted by nearly everyone as desirable features of all fish and wildlife restoration efforts, regardless of funding source or implementing entity. These features have been called for in previous fish and wildlife programs. Progress has been slow, however, in actually developing a high level of coordination among restoration efforts. The greatest progress has occurred when funding decisions were contingent upon developing coordinated efforts or agreements. When responsibilities have been vague or accountability lacking, coordination has often been weak or nonexistent. Having learned from experience, the Council, in this program, should be more specific in assigning responsibility for developing various aspects of a coordinated effort and in identifying consequences should coordination efforts fail.

An effective and efficient program requires coordination at both the policy and technical levels and an effective dialog between policy and technical groups. The following standards, strategies, and measures are designed to improve policy and technical coordination throughout this program.

Institutional and Programmatic Coordination

Fish and wildlife restoration activities are fragmented between many programs (e.g. Mitchell Act, LSRCF, FERC licensing requirements, ESA, etc.) conducted by many agencies (multiple agencies within each state, tribes, utility companies, multiple federal agencies). This creates the perception, and often the reality, of agencies working at cross purposes and wasting money on redundant activities. The Council's fish and wildlife program can be more effective if it coordinates and compliments existing programs and reduces the perception of redundancy. The following standards and strategies are intended to promote better coordination among programs:

Standards

- The fish and wildlife program will focus efforts on providing those actions and functions which coordinate and enhance the effectiveness of other, sometimes less flexible, fish and wildlife restoration programs.
- When establishing priorities, the fish and wildlife program will consider its projects within the context of the total efforts of all restoration programs.

Strategies

- Establish a program tracking coordinator who maintains a current inventory and description of all fish and wildlife management programs in the Columbia basin.
- Produce an annual report which a) inventories total expenditures of all programs in each of the 4-H areas in each subbasin, and b) identifies basin-wide issues which, through better coordination, could accelerate fish and wildlife restoration.
- Consult as a full Council on a quarterly basis with the directors of the fishery managing agencies, and on a government-to-government basis with the leadership of the Columbia River basin tribes. The Council expects the consultations will focus on program development, modification and implementation. In particular, efforts will be directed at expediting measures to improve the survival of the basin's anadromous fish, resident fish and wildlife populations and resolving any disputes that are hampering expeditious program implementation. As part of the consultations, the Council will also encourage the agencies and tribes to identify and resolve differences in their respective positions on Columbia River Basin fish and wildlife issues. The Council further expects regular contact will be maintained between the staffs of the Council and the agencies and tribes.
- Convene an annual workshop of tribal, federal, and state resource managers to identify and discuss options for improving coordination of restoration efforts

The Council's Strawman proposed that subbasin plans be coordinated with other regional subbasin planning efforts. It is unclear whether coordination will be mandated or left up to participant discretion. Further, it is unclear what will prevent planning efforts from being duplicated by other agencies. The inter-agency coordination efforts need to be more clearly spelled out so coordination is not up to the participant discretion. This paragraph of the Strawman says that "the Council aims to maximize coordination and cooperation and avoid duplication of these efforts" but does not suggest how this will be done.

Finding: The Council adopted provisions on coordination consistent with the substance of this recommendation, if more general. Coordination is intended to flow from a program with a substantive vision and objectives aimed not at particular activities, entities or fish and wildlife populations but at protecting and restoring ecological functions, river processes and habitat conditions. For subbasin and mainstem planning to work within this framework will require understanding, organizing, coordinating and integrating habitat objectives and activities in each subbasin, bringing together state and tribal watershed and salmon recovery efforts, ESA and Clean Water Act requirements, and so forth, and basing the plans in and building them out from existing assessments, plans and processes. Sections II.C, III.A.1, A.2, III.B.1, B.2, D.3, D.6, V.A.1, A.3-.6, VI.A, A.2-.5.

The Council did not provide the level of detail the Commission recommended on precisely how coordination will take place (although the program provides more on this subject than did the Strawman). As the Commission noted, coordinated implementation, research, monitoring, and evaluation are concepts everyone accepts and which have been called for in more or less detail in previous fish and wildlife programs, but have been difficult to bring to reality. The Council concluded that unilateral detail on coordination in the Council's program is largely ineffective and what is needed is the will on the part of the Council and others to make it actually happen. The key instead seemed to be to state the coordination needs and policies and then organize the substantive framework of the program in such a way that it will best succeed if mitigation and restoration activities are truly coordinated.

Source: Montana Fish, Wildlife and Parks
Recommendation No. 31

Recommendation: Montana recommended that subbasin plans provide fish and wildlife information for a variety of related planning processes. Examples include the U.S. Fish and Wildlife Service's and National Marine Fisheries Service's (NMFS) Endangered Species Act (ESA) recovery planning, land management and water quality planning and long-range Bonneville budget planning, in addition to the Council's project selection efforts.

Finding: The Council adopted provisions consistent with this recommendation. Sections II.C, V.A, A.2-.5, VI.A.6.

Source: Shoshone-Bannock Tribes
Recommendation No. 38

Recommendation: The Shoshone-Bannock Tribes noted that Section 4(h)(2)(C) of the Power Act allows for recommendations for the coordination and funding of fish and wildlife management to assist protection, mitigation, and enhancement efforts. The tribes recommended that the program include the following strategies and standards for achieving institutional and programmatic coordination:

Strategies

- Replace the Columbia Basin Forum with a program-tracking coordinator who maintains a current inventory and description of all fish and wildlife management programs in the Columbia basin.
- Produce an annual report which a) inventories total expenditures of all programs in each of the 4-H areas in each subbasin, and b) identifies basin-wide issues which, through better coordination, could accelerate fish and wildlife restoration.
- Convene an annual workshop of tribal, federal, and state resource managers to identify and discuss options for improving coordination of restoration efforts.

Standards

- The fish and wildlife program will focus efforts on providing those actions and functions that coordinate and enhance the effectiveness of other, less flexible, fish and wildlife restoration programs.
- When establishing priorities, the fish and wildlife program will consider its projects within the context of the total efforts of all restoration programs.

Finding: The Council adopted policies on coordination and reporting consistent with this recommendation. Sections III.D.9, V.A.4-.5, VI.A.5-.7. The Columbia Basin Forum is not a creation of the program or the Council and not within the authority of the program to establish or replace. The Council did not specifically call for a program tracking coordinator, but the very nature and form of the reorganized program will end up producing this inventory of existing management programs, as part of the subbasin planning process. The Council will be working with others to organize and provide access to this information. The Council did not call for an annual workshop on coordination -- this is a specific implementation detail to be discussed as part of program implementation.

Source: Spokane Tribe
Recommendation No. 28

Recommendation: The Spokane Tribe recommended that the Council allow for its program to be reconciled with the biological opinions of the Fish and Wildlife Service and the National Marine Fisheries Service when those opinions are issued.

Finding: The Council adopted provisions consistent with this recommendation, calling for consideration of and coordination with the hydrosystem operations aspects of the biological opinions and for coordination with and integration of the off-site mitigation aspects of ESA planning and implementation. Sections II.C, III.A, D.6, V.A, A.2-6, VI.A.6. Whether to align the program more closely with the specific objectives and measures in the biological opinions will be a subject for the subsequent mainstem and subbasin planning phases of the Council's program.

Source: Okanogan Nation Alliance and the Confederated Tribes of the Colville Reservation
Recommendation No. 51

Recommendation: The Okanogan Nation Alliance and the Colville Tribes noted that British Columbia's Columbia Basin Fish and Wildlife Program, the Columbia Basin Trust's Environment plan, the Council's Columbia River Basin Fish and Wildlife Program and the strategic salmon restoration plans of the individual Canadian and U.S. tribes and their Columbia River Inter-tribal Fisheries Commissions all contain examples of basinwide restoration programs. However, they lack the complete ecological and basin-wide vision to which we all aspire, and to which we the lead participants in the Okanogan watershed collaborations are dedicated.

In the future, it is clear that Canadian-U.S. collaboration could be beneficial in a system-wide context and as part of the long term vision for the basin. This would enable transboundary partners to develop fishery restoration programs aimed at joint policy development on methods and standards, on range extensions and introductions of anadromous salmonids, habitat restoration and protection and the operation of dams. And, in this joint planning effort the participants will be able to apply principles of ecosystem restoration and watershed planning as contemplated by the Council.

The Colville and Okanogan Tribes are committed to transboundary planning, and urge the Council to continue its historic work to protect, mitigate and enhance fish and wildlife upstream of and adversely affected by dam operations. Further, we encourage the Council to give priority to the establishment of formal transboundary model watershed plans. We also encourage the Council to support ecosystem-wide collaborations among agencies and their joint programs, and to influence parties on both sides of the border to seek collaborative solutions to the common challenges of the restoration of the Columbia Basin's fish and wildlife resources.

Finding: The Council called for the program activities and the subbasin planning process to coordinate with and integrate Canadian perspectives and programs, especially as concerns transboundary issues. Sections V.A, VI.A. 5.

Source: Natural Resources Conservation Service
Recommendation No. 10, 19, 20

Recommendation: The Natural Resources Conservation Service recommended that it be funded to work with the Oregon Conservation Partnership and the Idaho Conservation Partnership to assist in implementing the Council's fish and wildlife program, especially on private farm and ranch lands. The NRCS/Conservation Partnership planning process is based on a locally-led, voluntary system trusted by private land owners. The Natural Resources Conservation Service (NRCS) has provided technical assistance to private land users/owners for approximately 65 years. As a result of this working relationship, credibility and trust have been developed with these individuals and tribes. NRCS and the Partnership provide the best science available for habitat and watershed restoration with appropriate design standards to ensure quality service. Accountability is achieved through a web-based accountability system, performance indicators/results measurement system and other means.

Finding: The Council values the participation of the NRCS in the watershed and subbasin restoration efforts of the program. As funding decisions were not the subject of a program amendment process, the Council did not act on this recommendation.

Source: Washington State University -- Center for Reproductive Biology
Recommendation No. 12

Recommendation: The WSU center recommended that the Council utilize the universities as a resource for the program, especially in expanding the basic science and detail required to address the salmon restoration problem. Take advantage of the technical advances that occur in the university programs that provide leads and information for developing potential solutions. The WSU and University of Idaho Salmon Restoration Program can be a significant resource in the Council's program planning and implementation.

Finding: University scientists and programs already play a big role in the Council's program, through the independent science panels, program-funded research, and assistance to program participants in developing watershed restoration concepts and assessments. The Council did not adopt provisions specifically focused on the universities, but did adopt a number of provisions in which the continued participation of the universities will be important.

Source: Public Power Council
Recommendation No. 52

Recommendation: The Public Power Council recommended the establishment of a single governance body responsible for fish and wildlife activities in the Columbia Basin that balances fish and wildlife interests with social-economic and environmental interests. To the extent practical this should include or coordinate with all relevant institutions, including international entities. Establishment of the single governance body promises to be a difficult objective to achieve. While the region pursues that objective, it should adopt the alternate objective of achieving as much progress as possible within the existing governance structure. Success in this stage could lead to cooperation in succeeding stages of development and refinement of the fish and wildlife program. To be effective, this approach must involve high-level decisionmakers.

“Top down” decisionmaking is coordinated among federal agencies, states and tribes. “Bottom up” input is accepted as essential to implement management actions at the local watershed and subbasin levels. This means input from local residents and institutions is crucial to achieving habitat protection and improvement. Effective coordination among all relevant parties is necessary.

Finding: It is outside the authority of the Council to establish the governance body recommended. At most what the Council can do is call for maximum cooperation, coordination and integration of the basin’s fish and wildlife efforts. The subbasin planning process is conceived of as a possible vehicle to produce that result.

Source: Columbia River Alliance
Recommendation No. 39

Recommendation: The Alliance recommended that the Council assess the existing legal framework, jurisdiction by jurisdiction, to assess how its program fits into existing federal, state, tribal and private fish and wildlife protection efforts.

Finding: The Council is always mindful of its legal obligations and responsibilities and how those mesh with the activities and obligations of others, including the Power Act provisions requiring that the ratepayers be responsible only for mitigation that addresses the effects of the hydrosystem and that Bonneville provide funding for fish and wildlife activities in addition to, and not in lieu of, the activities funded under other authorities. However, the purpose or goal of the legal assessment recommended was not clear to the Council, nor what that would mean for program adoption. The Council did call, as noted above, for a substantial effort by the Council and others to coordinate and integrate the program with the fish and wildlife mitigation, protection and restoration efforts of others.

Source: Northwest Resource Information Center, Inc.
Recommendation No. 51

Recommendation: The Northwest Resource Information Center, Inc., stated that under the Power Act, the Corps of Engineers must manage, operate, or regulate the four lower Snake River dams in a way that takes the Council’s program into account “to the fullest extent practicable . . . at each relevant stage of [the] decisionmaking process.” The Council should require the Corps and all federal agencies to demonstrate their compliance or noncompliance with the above mandates in sufficient detail to provide for public and judicial review.

The Power Act confers on the Corps, Bonneville, National Marine Fisheries Service, and all other federal agencies, the duty -- independent of the Council’s program -- “to adequately protect, mitigate and enhance fish and wildlife, including related spawning grounds and habitat” affected by the dams “in a manner that provides equitable treatment” to anadromous fish. The Council require each relevant federal agency to develop within 90 days a mechanism by which it can demonstrate for meaningful review by decision makers, the public, and the courts, that it is providing anadromous fish “equitable treatment” “on a par” with other uses of the hydrosystem. This should include a risk analysis and management protocol that addresses all uses of the system. It should discuss the needs of each respective use of the system, the likelihood those needs will not be met, the factors that threaten or make it less likely that identified needs will not be met, and how each agency will perform its duties so that the risk a use’s needs will not be met is equitably apportioned among all major users (including at least irrigation, recreation, power,

navigation, fish and flows for fish, and meeting the federal government's special obligations to Indian tribes).

Finding: This recommendation is largely concerned not with how the Council develops the program, or the way the Council uses the authorities and responsibilities it has in implementing the program, but in the way the federal agencies live up to their responsibilities under Section 4(h)(11) of the Power Act. Those actions by the federal agencies are already subject to judicial review (as illustrated by the State of Montana's civil action in the late 1990s against the Corps of Engineers and Bureau of Reclamation, alleging a failure to comply with the Section 4(h)(11) requirement to take the program into account in deciding on operations at Hungry Horse and Libby dams, litigation in which the Council participated). Outside of Section 4(i) of the Power Act, which authorizes the Council to review the actions of the Bonneville Administrator from time to time, the Council has no specific statutory procedure to turn to and cannot require or force the federal agencies to follow any particular procedure to demonstrate compliance with the obligations of the Act directed at the federal agencies. The Council does have the informal political and public authority to oversee and question the activities of the federal agencies with regard to the program, an oversight function the Council exercises quite often.

Source: Bill Bosch
Recommendation No. 3

Recommendation: Mr. Bosch recommended that the region redirect federal Endangered Species Act (ESA) efforts. ESA has done its job in the Columbia River Basin -- it has sounded the loud and clear alarm that the health of the entire ecosystem is in jeopardy and it is time to act. Everybody has heard the alarm and most people are ready and willing to act (and in many cases are already acting). It is time for the federal government to back off into a monitoring, advisory, and funding role and let the people of the region proceed with implementing the necessary changes.

Finding: The Council does not have the authority to require the federal government to redirect the ESA efforts in the basin. But the Council does agree with the concept of a regional effort to address the ecosystem needs of fish and wildlife that can accommodate and address the objectives for listed species. That is how the Council envisions the integration of ESA requirements into the subbasin planning process and Bonneville off-site mitigation funding under the Council's program. Sections II.C, III.A.1, V, VI.5.

Source: Gordon Haas
Recommendation No. 15

Recommendation: Mr. Haas recommended that the Council include and accommodate the Canadian perspective and information into any decision-making protocols, as approximately one-third of the main Columbia River basin is in British Columbia, along with the headwaters of this great river. The best remaining habitat in the mainstem Columbia is arguably also in this Canadian portion, and the healthiest remaining sockeye salmon stock now spawns in Canada as well.

Finding: The Council adopted provisions calling for the program activities and subbasin planning process to coordinate with and integrate Canadian perspectives and programs. Sections V.A, VI.A. 5.

7. High priority actions

7(a) Criteria and procedures

Source: Washington Department of Fish and Wildlife
Recommendation No. 43

Recommendation: Washington recommended that as subbasin planning continues, immediate actions may be necessary to forestall further declines in Columbia River basin fish and wildlife. Authority for these high priority, early actions comes as a part of the trust responsibilities of the federal government to the tribes and from responsibilities under the Endangered Species Act.

All high priority project applicants must ensure that assessments and planning (e.g. NEPA) work can be completed so the project can begin as soon as possible in 2001. The Council should then expedite the review process. Immediate action projects should be substantially completed within two years, and any actions on private land must depend on voluntary cooperation of landowners. In addition, projects must meet one or more of the following threshold criteria:

- Action is necessary to reduce imminent risk to state or federally listed species or their habitat.
- Action will secure high quality or critical habitat, or will provide connectivity between patches of high quality or critical habitat, and the habitat is at imminent risk of alteration.
- Action will result in immediate improvement in native resident fish, anadromous fish or wildlife survival. Actions that improve conditions for multiple stocks or populations should have greater urgency.

Finding: The Council adopted provisions substantially consistent with this recommendation. Section X. Based on other recommendations and comments, the Council limited the high priority initiative to addressing imminent risks to species listed under the federal Endangered Species Act.

Source: National Marine Fisheries Service
Recommendation No. 54

Recommendation: The Fisheries Service recommended:

- Implement immediate or high priority actions with a high likelihood of benefiting listed species in the short term, prior to the completion of subbasin assessments and plans. Immediate steps are needed to reduce risks to salmon and steelhead survival.
- Apply criteria to project selection that are available and understandable to project proponents. To assist with decision-making for high priority actions, NMFS recommended the following "immediate action criteria." NMFS also recommended ISRP review of the criteria before adoption. Projects that do not meet ISRP criteria should not be considered for funding.
- For a project to be considered for immediate action, all assessments and planning (e.g., NEPA) work should be completed so the action can begin before September 30, 2001. Exceptions to this requirement should be provided for proposals that are more programmatic in nature. Examples of programmatic actions include funding programs for water or land acquisitions. Such programs need to be established immediately, but need flexibility for implementation when acquisition opportunities arise and ripen.
- In addition, actions prior to subbasin assessment and planning should satisfy one or more of the following criteria:

1. The action restores or acquires potentially productive habitats that will be largely self-maintaining after the activities are complete.
2. The action addresses imminent risks to survival of one or more species.
3. The action results in substantial benefits to species survival in not more than 5 years after implementation, and these benefits are measurable.
4. The action is part of an action plan that is derived from science-based assessment.
5. The action addresses a habitat enforcement issue and results in the protection of aquatic habitats.

Finding: The Council adopted a high priority project initiative and a set of criteria substantially consistent with the recommendation. Section X. The Council did not have the opportunity to have the ISRP review the criteria before finalizing the program.

Source: Bonneville Power Administration
Recommendation No. 37

Recommendation: Bonneville recommended that the Council use its existing within-year project review process to consider immediate, high priority actions brought forward by the resource managers and others for implementation. Immediate action items benefiting critical need populations should fit a time frame for implementation by the end of 2001 and must have measurable, beneficial effects on these populations in the short term. Bonneville noted the importance of a process with clear criteria for early identification of critical actions in all program areas, especially hatcheries and habitat, that can help achieve progress towards recovery of salmon and steelhead stocks. Bonneville also noted the value of subbasin assessments and planning as valid tools for evaluating what has been accomplished to date in a geographic area, what biological gaps or needs still exist, and what strategies should be chosen to address these needs. And Bonneville made clear that it did not wish to circumvent the valuable ordinary process for rigorous evaluation of projects for funding. Bonneville intended its proposed high priority criteria to respect the importance and value of the watershed assessment and planning process, as well as the need for the involvement of local groups and landowners in the planning, evaluation, selection and implementation of whatever actions are recommended. Consequently, Bonneville expected only a focused number of projects to be agreed upon regionally as actions that require an expedited evaluation and consideration for immediate implementation.

Criteria for Bonneville Funding of Immediate Actions

Objective. The policy objective is to provide guidance to enable Bonneville to choose what immediate actions to fund through the direct program during FY 2000-2001 to benefit ESA listed species, tribal trust or treaty resources, or prevent the listing of additional species. In addition, if the Council keeps an immediate action format once this amendment cycle is complete, these criteria may also serve for those determinations as well. For immediate habitat actions, the biological objectives are to prevent further degradation of tributary, estuary and mainstem habitat conditions and water quality, protect existing high quality habitats, and restore degraded habitats on a priority basis.

Summary. Immediate actions will be considered for the estuary, mainstem, and high priority tributaries. Bonneville will favor cost-share actions. Actions likely to receive funding must meet at least one of the following criteria:

- Addresses imminent risks to survival of one or more species.
- Immediately results in substantial benefits to species and these benefits are measurable.

- Or, habitat actions may also secure existing high-quality habitats that include currently productive habitats (fully seeded) or important habitats (currently underseeded) that could be productive with increased fish returns.

In addition, all actions should meet the following criteria:

- Can be done with existing NEPA compliance documents or categorical exclusions.
- Is part of an action plan derived from science-based assessment.
- Implementation can be started before September 30, 2001.
- Is in a priority watershed. Bonneville suggests the scientific data and regional needs point to the following watersheds as important priorities: John Day, Deschutes, Grande Ronde, White Salmon, Upper Salmon, Methow, and Okanogan rivers.
- Supports credit to hydrosystem for actions made possible by Bonneville.

Habit actions should also meet these criteria:

- Is largely self-sustaining habitat after necessary habitat improvements are completed.
- Restores habitat out from core critical habitat area, rebuilding connected habitats that support spawning and rearing.

Criteria for high priority actions should receive ISRP review. All actions would proceed through the Council's prioritization process, including ISRP review and Council recommendation. Bonneville would make a funding decision on a proposal only after completion of this process and any ESA consultation or NEPA work that is required. Council is encouraged to use its existing process for review and recommendation of within-year emergency/high priority actions to Bonneville for funding.

All immediate actions Bonneville implements shall be credited to Bonneville's fulfillment of the hydrosystem biological opinion(s) and Council's program as applicable.

Finding: The Council adopted a high priority project initiative and a set of criteria substantially consistent with the recommendation. The Council intends to use its existing within-year project review processes and ISRP review to solicit, review and recommend high priority projects for funding. Section X. The criteria the Council adopted did not include that the project must be in a "priority watershed." The Council concluded that a project, wherever it is in the basin, that can be shown to address an imminent risk to a listed species, is ready to implement, and is a time-limited opportunity and/or is broadly recognized as achieving direct fish and wildlife benefits should receive consideration for possible funding.

Source:	Spokane Tribe
Recommendation No.	28
Source:	Montana Fish, Wildlife and Parks
Recommendation No.	31
Source:	Colville Confederated Tribes
Recommendation No.	33
Source:	Burns-Paiute Tribe
Recommendation No.	34
Source:	Shoshone-Bannock Tribes
Recommendation No.	38
Source:	Columbia River Inter-Tribal Fish Commission
Recommendation No.	40
Source:	Coeur d'Alene Tribe
Recommendation No.	42
Source:	U.S. Fish and Wildlife Service
Recommendation No.	46
Source:	Kalispel Tribe
Recommendation No.	48
Source:	Kootenai Tribe
Recommendation No.	50

Recommendation: These fish and wildlife agencies and tribes recommended various versions of the same or similar criteria, summarized here with differences noted:

The federal agencies have suggested that as planning and studies continue, immediate actions may be necessary to forestall further declines in Columbia River Basin fish and wildlife. Authority for these high priority, early actions comes as a part of the trust responsibilities of the federal government to the tribes and from responsibilities under the Endangered Species Act. (The CRITFC recommendation did not include this paragraph. The Fish and Wildlife Service added: The U.S. Fish and Wildlife Service will recommend early implementation actions through the Biological Opinions. There will be possible recommendations for other actions for anadromous and resident fish and wildlife.)

For a project to be considered for immediate action, all assessments and planning (e.g., NEPA) work should be completed, so the project can begin before September 30, 2001. In addition, projects must satisfy one or more of the following categories:

Category A: Tribal Trust Responsibilities -- meet the following criteria, subject to agreement between the tribe and the federal government: (The CRITFC recommendation said meet "all" the criteria)

- Action represents a high-priority project approved by a tribal government.
- A tribal plan identifies the action as necessary to protect and rebuild fish and/or wildlife in the Columbia River Basin. (For the words "tribal plan," the Colville Tribes substituted "plan/program or existing measure.")

Category B: Biological Needs (ESA, Unfunded Current Projects, FCRPS, Tier II Projects, etc.) -- meet one of the following criteria: (The CRITFC recommendation said "at least" one.)

- The action restores or acquires potentially productive habitats that will be largely self-maintaining after the activities are complete.
- The action addresses imminent risks to survival of one or more species.

- The action results in substantial benefits to species survival in not less than 10 years after implementation, and these benefits are measurable. (The CRITFC recommendation called for “results in tangible benefits to fish habitat conditions or otherwise benefits species survival within five years.”)
- The action is part of an action plan that is derived from science-based assessment.
- The action addresses a habitat enforcement issue and results in the protection of aquatic habitats. (The CRITFC recommendation called for “results in the protection of habitats throughout the geographic range of anadromous fish, resident fish, and wildlife.”)
- The action secures a high priority habitat area that contributes to the fulfillment of a critical life requisite(s) for terrestrial wildlife species.
- The Colville Tribes added: Actions which address conservation mitigation as a result of Biological Opinions and FCRPS operations.

Category C : Fish and Wildlife Management Coordination Needs

- Early action funding process should be used to provide funding for the managers to develop subbasin recommendations since work must begin immediately to meet the schedule currently being considered. (Provided in this form by Montana, the Fish and Wildlife Service, and the Shoshone-Bannock Tribes only. But many of the other agencies and tribes recommended funding for subbasin planning and for subbasin planning coordinators as part of the high priority initiative.)

The Spokane, Coeur d’Alene, Kootenai and Kalispel Tribes recommended some additional language:

All “high priority projects” (also called “early implementation actions” and other similar terms) should meet one or more of the following criteria:

- fully implements the Council's current (1994-95) program;
- addresses the longstanding inequitable distribution of the basin’s funds (the focus on mainstem anadromous runs should be offset by greater funding for upriver/storage reservoir priorities),
- is necessary to implement and mitigate for the NMFS and USFWS Biological Opinions;
- protects/enhances existing mitigation efforts and projects;
- is in compliance with the hatchery reform recommendations of the APR,
- is required by law and/or by treaty and trust responsibilities to the tribes.
- High priority/immediate funding in full should be given to all projects in the current (1994-95) program that have been approved through CBFWA consensus and ISRP review but have not been funded only because the budget was inadequate. These tribes identified sub-sections, measures and projects in and related to Sections 10 (Resident Fish) and 11 (Wildlife) of the existing program as high priority actions.

Finding: The Council adopted a high priority project initiative and review criteria substantially consistent with these recommendations. Section X. The one major difference is that the Council’s criteria require that all high priority projects address imminent risks to species listed under the Endangered Species Act. The recommendations would allow for high priority projects through alternative categories (tribal high priority projects generally, subbasin planning, management coordination needs, or projects in the current program that have not yet been funded) that do not address imminent risk to listed species. As noted in the recommendations and comments of the National Marine Fisheries Service and Bonneville, the genesis of this high priority project initiative is the need to begin immediately certain work identified in the biological opinions on the hydrosystem that could not wait for subbasin planning or the ordinary project review cycle. For that reason, the Council decided to limit the criteria for the review to focus only on addressing the problems of listed species.

Source: Oregon Department of Fish and Wildlife
Recommendation No. 26

Recommendation: Oregon recommended the following procedure for a high priority project selection process:

- the Council adopts criteria for evaluating the management priority and technical merit of projects proposed for funding as high-priority actions;
- the Council solicits proposals for high-priority projects;
- the Council provides notice to the public that the fish and wildlife managers and ISRP will review the proposals for management priority and technical merit;
- the fish and wildlife managers evaluate the management priority and technical merit of proposed projects using criteria adopted by the Council and submit their recommendations to the Council for projects to be funded by Bonneville;
- the ISRP evaluates the technical merit of proposed projects using criteria adopted by the Council and submit their evaluation to the Council;
- the Council conducts a public review of the fish and wildlife managers' recommendations and the ISRP's technical evaluations;
- the Council develops its draft recommendations for projects to be funded by Bonneville as high-priority actions;
- the Council conducts a public review of its recommendations;
- the Council submits its final recommendations to Bonneville.

Oregon recommended that the Council use the following criteria to evaluate the management priority and technical merit of projects proposed for funding on an expedited basis under the program:

Management Priority

- Does the project address objectives, problems, limiting factors, and/or critical information needs, and/or does it support strategies described in an existing assessment or plan (e.g. watershed assessment or a strategic, species, or subbasin plan) or identified in the program, the Endangered Species Act or the Clean Water Act?
- Does the project clearly describe the risks to fish and wildlife and their habitats if the project is not funded, and does it explain why those risks are significant and unacceptable?
- Does the project have demonstrated support from fish and wildlife, water, and land managers and from others whose cooperation and involvement is needed for its success?
- Does the project promote normative ecosystem processes, connectivity of habitats, community diversity, species richness or other scientific principles critical to the protection, mitigation, and enhancement of fish and wildlife and their habitats?
- Does the project complement or support ongoing projects or activities, and is it critical to the success of these other projects or activities?
- Does the project stand on its own or is it dependent on other activities that, if unfunded, threaten its success (e.g. long-term operations and maintenance contracts)?
- Does the project describe how its progress and success will be monitored and evaluated?
- Does the project distinguish itself from other alternatives to achieve its objectives?
- Have project costs been minimized, i.e. is there a cost-share, does it build on existing infrastructure, etc.?

Technical Merit

- Does the project define its objectives, deliverables, and schedule?
- Does the project explicitly relate its deliverables to its objectives?
- Does the project explain how its approach and techniques ensure it will achieve its objectives and deliver the products it promises according to the schedule it proposes? Is success likely, given the explanation?
- Does the project explain whether its approach and techniques pose risks to the success of other projects or to non-target natural resources? Are those risks acceptable, given the explanation?
- Does the project explain whether its approach and techniques are scientifically proven and sound?
- Does the project distinguish its approach and techniques from commonly used and applicable alternatives?
- Does the project explain how it will monitor and evaluate its progress toward and success in achieving its objectives?
- Does the project explain why the resources it requests (staff, equipment, materials, etc.) are necessary and reasonable to implement its work plan?

Finding: The Council adopted a high priority project initiative and criteria consistent with the substance of this recommendation, if not as detailed. Section X. The Council's intent is to use an expedited version of its regular project review process for the high priority project review, including review by the Independent Scientific Review Panel, a process generally consistent with the procedures recommended here. The Council also adopted high priority project criteria that, while worded quite differently and not as detailed as here, are consistent in basic substance with the recommended standards. Some of the detailed standards recommended reflect or parallel the scientific review standards assigned to the ISRP in Section 4(h)(10)(D) of the Power Act. The Council did not see the need to repeat those criteria in the program.

The one substantive difference between what Oregon recommended and what the Council adopted is that the Council required all high priority projects to address imminent risks to species listed under the Endangered Species Act. Oregon's recommendation could be interpreted to allow for projects that addressed objectives identified in the program or in Clean Water Act for the benefit of fish or wildlife that are not listed. As noted in the recommendations and comments of the National Marine Fisheries Service and Bonneville, the genesis of this high priority project initiative is the need to begin immediately certain off-site mitigation work identified in the biological opinions that could not wait for subbasin planning or the ordinary project review cycle. For that reason, the Council decided to limit the criteria for the review to focus only on addressing the problems of listed species.

Source: Columbia River Inter-Tribal Fish Commission
Recommendation No. 40

Recommendation: The Commission recommended a procedure for identifying and implementing emergency production and habitat actions:

- The fishery managers should develop project-specific action plans for production and habitat measures for prompt implementation in Fiscal Years 2001 and 2002. Because of the dire status of Snake River chinook, as well as some other populations in the basin, these implementation action plans should contain measures that will provide immediate increases in natural production and survival for adults returning in 2001 and 2002 and for their progeny. In identifying actions, use Table 1, Table 2 and Appendix A of the Columbia Basin Tribal Restoration Plan submitted to

the Council on August 15, 1994, the Integrated System Plan and other appropriate information. Submit action plans to the Council by June 1, 2000.

- The Council should review the action plans for fiscal years 2001 and 2002 by the end of May 2001.
- Absent Council disapproval, fund, or share in funding, projects called for in the action plans as a high priority in the fiscal year identified by the fishery managers.

Finding: The Council adopted criteria for high priority projects that while very different in wording from this recommendation, are based in the same basic substantive requirement to address the dire state of (imminent risk to) species listed as threatened or endangered through projects that clearly can provide direct benefits to these species in 2001-02. Based on the recommendations and comments of others, the criteria emphasize habitat considerations, in part because people are more likely to be able to implement discrete, beneficial habitat projects immediately with little planning and permitting when compared to production activities. But, production activities are not absolutely excluded by the criteria or from consideration during FY 2001 project review processes for emergency funding.

The Council is planning to use an expedited version of its regular project review process for the high priority project review, based in section 4(h)(10)(D) of the Act, and so did not adopt the procedures recommended here.

Source: Yakama Nation
Recommendation No. 24

Recommendation: The Yakama Nation recommended that if this amendment process can be concluded on schedule, i.e. by the end of August, 2000, additional Bonneville funds could be made available in Fiscal Year 2001 to address immediate action items. Habitat initiatives in particular should be implemented as immediate action items in the 2001 budget, and teams should develop the requisite standards, criteria, and evaluation protocols immediately. Habitat projects take at least two- to three-years to demonstrate a positive salmonid response. If we implement this approach immediately, we will have positive results within the 5-year amendment period. In terms of habitat restoration activities, we should be thinking of at least a \$50,000,000 per year effort over the next 5 years.

Finding: The Council adopted a high priority initiative and set of review criteria consistent with this recommendation, focused especially on habitat projects. The Council did not have information at the phase of the program amendment process that would justify setting a specific implementation budget in the program for the high priority projects.

Source: Kootenai Tribe
Recommendation No. 50

Recommendation: The Kootenai Tribe recommended that “high priority /early action” projects must be consistent with the tribal trust responsibility.

Finding: Bonneville will be the source of funding for high priority projects. Bonneville’s actions must be consistent with the federal government’s tribal trust responsibility.

Source: City of Portland
Recommendation No. 45

Recommendation: The City of Portland recommended that the criteria for selecting early action or high projects include:

- Priority should be given to early action projects that meet not only the obligations of the Northwest Power Act but also the obligations of the federal Endangered Species Act, and other federal laws and regulations as well. Those laws and regulations include, but are not limited to: NPDES, TMDL and other Clean Water Act obligations, Superfund, NEPA, etc. The Council should put highest priority on those early action items that satisfy or assist in satisfying multiple obligations. In other words, once a project is proved consistent with the Power Act, it would be scored against its ability to satisfy other statutes as well. Projects satisfying more statutes would be considered higher priority.
- Some portion of the budget for high priority projects should be reserved for urban areas. Urban areas historically have not received priority under the Power Act or in Council outreach and involvement activities. Nonetheless, urban areas often are located in critical migration corridors. The effects of urban development on fish migration and survival are largely unknown, as are the effects of urban bank development on fish behavior and survival. Given the scope of recent ESA listings and the limiting factors urban areas may create for fish originating in relatively pristine watersheds and subbasins, the city recommended that some early action dollars be dedicating to assessing urban areas' contribution to limiting factors.

Finding: Consistent with the substance of the first recommendation, the Council adopted criteria that, while focused on the need to address imminent risks to species listed under the Endangered Species Act, also required that the projects meet the requirements of the Power Act and added weight to those projects that also improve conditions for streams determined to be water-quality limited under the Clean Water Act.

The Council did not adopt the second recommendation to reserve some portion of the budget for high priority actions in urban areas. Instead, projects in urban areas that address imminent risks to a listed species and meet the other criteria will have the same priority as projects outside of urban areas.

7(b) Possible actions

Source: National Marine Fisheries Service
Recommendation No. 54

Recommendation: The Fisheries Service recommended that projects funded through this process include water diversion screening programs, initiatives to protect high-value riparian areas, initiatives to improve water quality and initiatives to improve tributary stream flows.

Finding: The Council agreed that these are types of projects likely to fit the criteria for high priority projects. *See* the list of examples in Section X.

Source: Oregon Department of Fish and Wildlife
Recommendation No. 26

Recommendation: Oregon recommended a set of project proposals for consideration for funding as high-priority actions. Each proposal will be expanded into a detailed statement of work once the Council adopts criteria and a process for proposal evaluation. A list of project titles follows:

1. Implement Oregon Plan Monitoring Program in the Columbia Basin
2. Watershed Assessments
3. Riparian Condition Assessment Through Spectrometric Imaging Of Riparian Vegetation
4. Establish a water bank to promote voluntary actions to enhance instream flows in key stream reaches on Oregon tributaries to the Columbia River
5. Critical Habitat Inventory of the Lower Columbia River and Estuary, Phase Two
6. Apply for Additional Instream Water Rights
7. Bull Trout Recovery Critical Needs
8. Create/Enhance Components of ODFW's Natural Resource Data Management System
9. Deschutes River Eastside Tributary Summer Steelhead Study
10. Assist in Locating and Purchasing Existing Water Rights for Instream Use
11. Fifteenmile Creek Subbasin Stream Habitat Restoration
12. Fifteenmile Creek Physical Stream Surveys / Habitat Inventories
13. Install An Adult Salmonid Trapping Facility Near the Mouth of Fifteenmile Creek
14. Add Additional Stream Gauging Stations
15. Improve Columbia Basin Hatchery Facilities for Salmon and Steelhead Production Identified in ODFW's Assessment Beyond the IHOT Audit
16. Implement Remedial Actions Recommended in the 1995 Integrated Hatchery Operations Team (IHOT) Hatchery Audits
17. Hood River Fish Screen Construction Farmers Irrigation District
18. Securing Wildlife Mitigation Sites - Oregon, Horn Butte
19. Completion of Pine Creek Ranch Acquisition
20. Punch Bowl Falls Fishway and Fishway Access (stairway) Repair
21. ODFW Columbia Basin Subbasin Planning Coordination
22. Encourage Water Conservation to Return Conserved Water to Instream Flows
23. Securing Wildlife Mitigation Sites - Oregon
24. Willamette River Falls Fishway; Phase IV and V Reconstruction
25. Provide Upstream and Downstream Passage at Willamette Subbasin Dams
26. Restore Riverine and Floodplain Habitat by Purchasing Willamette River and Tributary Revetment

27. Oregon Wildlife Mitigation Trust Fund
28. Ochoco National Forest Fish and Wildlife Improvements
29. Status, Life History, and Genetic Characterization of Summer Steelhead in NE Oregon
30. Audit of Bonneville Wildlife Mitigation Implemented to Date; Assessment of Direct Operational Impacts to Wildlife from the Federal Hydropower System in the Columbia Basin
31. Columbia Basin Technical Participation in Analytical Assessment of Provincial and Subbasin Plans

Finding: The Council did not adopt or reject recommendations for specific high priority actions or projects. The Council assumed that all of the projects recommended might merit high priority. The key in this one-time-only project selection process will be the extent to which any proposed project satisfies the high priority criteria for a funding recommendation, an evaluation that will be made in the project review process by the ISRP, the National Marine Fisheries Service, the other fish and wildlife managers, Bonneville and the Council.

Source: Washington Department of Fish and Wildlife
Recommendation No. 43

Recommendation: Washington recommended 25 immediate action projects that it believes meet the criteria it recommended.

Finding: The Council did not adopt or reject recommendations for specific high priority actions or projects. The Council assumed that all of the projects recommended might merit high priority funding. The key in this one-time-only project selection process will be the extent to which any proposed project satisfies the high priority criteria for a funding recommendation, an evaluation that will be made in the project review process by the ISRP, the National Marine Fisheries Service, the other fish and wildlife managers, Bonneville and the Council.

Source: Columbia River Inter-Tribal Fish Commission
Recommendation No. 40

Recommendation: The Commission provided 30 pages of tables with actions recommended for consideration under the high priority action category -- Tables 1.C.1.1 (harvest measures); 1.C.2.2 (five dam drawdown actions); 1.C.3.1 (production measures); 1.C.4.1 (habitat measures); 1.C.5.1 (coordination, research, monitoring and evaluation measures).

Finding: The Council did not adopt or reject recommendations for specific high priority actions or projects. The Council assumed that all of the projects recommended might merit high priority funding. The key in this one-time-only project selection process will be the extent to which any proposed project satisfies the high priority criteria for a funding recommendation, an evaluation that will be made in the project review process by the ISRP, the National Marine Fisheries Service, the other fish and wildlife managers, Bonneville and the Council.

Source: Yakama Nation
Recommendation No. 24

Recommendation: The Yakama Nation recommended lists of habitat and production actions that needed funding. Habitat initiatives should be implemented as immediate action items in the 2001 budget, and teams should develop the requisite standards, criteria, and evaluation protocols immediately.

Finding: The Council did not adopt or reject recommendations for specific high priority actions or projects. The Council assumed that all of the projects recommended might merit high priority funding. The key in this one-time-only project selection process will be the extent to which any proposed project satisfies the high priority criteria for a funding recommendation, an evaluation that will be made in the project review process by the ISRP, the National Marine Fisheries Service, the other fish and wildlife managers, Bonneville and the Council.

Source: Confederated Tribes of the Warm Springs Reservation
Recommendation No. 21

Recommendation: The Confederated Tribes of the Warm Springs Reservation recommended two measures that the tribe labeled “high priority” actions:

- Determine life distribution, abundance, life history patterns, cultural use patterns of Pacific Lamprey in the Deschutes and other subbasins within the CTWSRO ceded area.
- Continue water conservation/optimization projects in the John Day River Basin.

Finding: The Council did not adopt or reject recommendations for specific high priority actions or projects. The Council assumed that all of the projects recommended might merit high priority funding. The key in this one-time-only project selection process will be the extent to which any proposed project satisfies the high priority criteria for a funding recommendation, an evaluation that will be made in the project review process by the ISRP, the National Marine Fisheries Service, the other fish and wildlife managers, Bonneville and the Council.

Source: Colville Confederated Tribes
Recommendation No. 33

Recommendation: The Colville Tribes recommended:

- Fund the development and implementation of a pilot strobe light, fish entrainment deterrent system at Grand Coulee Dam as detailed in Bonneville Project # 9001800.
- Fund the design and construction of additional incubation and rearing capacity at the Colville Tribal Fish Hatchery to reduce densities of rainbow trout.
- Fund Okanogan River summer steelhead acclimation facilities.
- Fund the reintroduction of Okanogan River spring chinook.
- Fund a Columbia River summer/fall chinook hatchery program at Chief Joseph Dam.
- Fund an Okanogan River sockeye salmon supplementation hatchery program.

Finding: The Council did not adopt or reject recommendations for specific high priority actions or projects. The Council assumed that all of the projects recommended might merit high priority funding. The key in this one-time-only project selection process will be the extent to which any proposed project

satisfies the high priority criteria for a funding recommendation, an evaluation that will be made in the project review process by the ISRP, the National Marine Fisheries Service, the other fish and wildlife managers, Bonneville and the Council.

Source: Spokane Tribe
Recommendation No. 28

Recommendation: The Spokane Tribe recommended implementation of the following measures as meeting the criteria for high priority funding:

- fund engineering, feasibility and other associated studies to find ways to prevent entrainment of fish at Grand Coulee Dam;
- provide security for long-term operations and maintenance expenses for habitat and mitigation investments made under the current and past Fish and Wildlife programs;
- additional measures identified in the UCUT Upper Columbia River Blocked Area Provincial Amendment (summarized in various parts, shown as recommendations by the Spokane, Coeur d'Alene, Kalispel and Kootenai Tribes).

Finding: The Council did not adopt or reject recommendations for specific high priority actions or projects. The Council assumed that all of the projects recommended might merit high priority funding. The key in this one-time-only project selection process will be the extent to which any proposed project satisfies the high priority criteria for a funding recommendation, an evaluation that will be made in the project review process by the ISRP, the National Marine Fisheries Service, the other fish and wildlife managers, Bonneville and the Council.

Source: Kootenai Tribe
Recommendation No. 50

Recommendation: The Kootenai Tribe of Idaho recommended the following for high priority/early action funding:

- Habitat acquisition for protection of sensitive fish and wildlife species
- Long term funding for the Kootenai Tribal Hatchery operations and maintenance
- Long term funding for land acquisition operations and maintenance
- Long term funding commitment for ongoing artificial nitrification of Kootenay and Arrow Lakes as long as flow augmentation occurs for U.S. salmon recovery efforts
- Support for Key Ecological Functions analysis (including plants) in the Kootenai drainage

Finding: The Council did not adopt or reject recommendations for specific high priority actions or projects. The Council assumed that all of the projects recommended might merit high priority funding. The key in this one-time-only project selection process will be the extent to which any proposed project satisfies the high priority criteria for a funding recommendation, an evaluation that will be made in the project review process by the ISRP, the National Marine Fisheries Service, the other fish and wildlife managers, Bonneville and the Council.

Source: Coeur d'Alene Tribe
Recommendation No. 42
Source: Kalispel Tribe
Recommendation No. 48

Recommendation: The two tribes recommended the following high priority action:

Wildlife Habitat Acquisition Fund

Implementation of an early action item in the form of an interim funding agreement with the core members of the Albeni Falls Interagency Workgroup. These interim funds are necessary for continuing land protection efforts for wildlife that specifically target the remaining construction and inundation losses for the facility (94% still remain). This agreement should cover a minimum period of five-years and should be implemented under the auspices of the Albeni Falls Interagency Work Group. Make the following part of the agreement:

- Agreement period is defined as October 2000 to September 2005;
- Annual funding of \$6 million (total of \$30 million over 5 years) will be made available to the core members of the Albeni Falls Interagency Work Group;
- Funds shall be spent on habitat protection and enhancement only;
- Projects must mitigate for wildlife habitat losses due to either the construction and inundation or operations of Albeni Falls Dam;
- Bonneville will make the funds available (including acquired interest) when the funds are actually needed for purchase (i.e., contractors won't accumulate interest on funds);
- Contractors shall have flexibility to carry forward annual allocation;
- Bonneville will retain any funds not spent by September 2005;
- Bonneville will provide adequate annual O&M funding for all past and new wildlife habitat projects above the \$6 million acquisition funding.
- Bonneville will receive credits in the form of habitat units for all protection and enhancement actions to be counted against the loss ledger for Albeni Falls Dam.

Finding: The Council did not adopt or reject recommendations for specific high priority actions or projects. The Council assumed that all of the projects recommended might merit high priority funding. The key in this one-time-only project selection process will be the extent to which any proposed project satisfies the high priority criteria for a funding recommendation, an evaluation that will be made in the project review process by the ISRP, the National Marine Fisheries Service, the other fish and wildlife managers, Bonneville and the Council.

Source: Idaho Department of Fish and Game
Recommendation No. 36

Recommendation: Idaho recommended the following early actions:

- Immediately fund project 20148 – Evaluate bull trout population status /N.F. Clearwater. Although bull trout have been observed and collected throughout the basin, little information is available on their life history or distribution. Prior to construction of Dworshak Dam, bull trout had the opportunity to interchange with other bull trout populations in the Clearwater River drainage. The maintenance of adequate migratory corridors throughout the Clearwater River drainage may be an important feature to ensure the genetic interchange suggested. With construction of Dworshak Dam near the mouth of the North Fork Clearwater River, movement of bull trout is limited to downstream passage only as there is no avenue by which bull trout can move upstream past Dworshak Dam. Similarly, bull trout that move downstream of the dam can

no longer return to the North Fork Clearwater River. The impact of severing the migratory corridor up the North Fork Clearwater River could be critical in sustaining bull trout upstream of Dworshak Dam. Without more information the disruption of this migratory corridor can only be viewed as a threat to the persistence of the North Fork Clearwater River bull trout population.

- Work with local Watershed Councils and governments, landowners, state and federal land managers and concerned citizens to:
Identify critical needs and associated costs for habitat actions to accommodate the needs of the federal biological opinions effecting anadromous fish, resident fish and wildlife.
Develop strategies for creating trust funds for selected high priority drainages to insure continuity of actions.
- Initiate immediately discussions among the affected parties on a long-term strategy for managing the elevation of Lake Pend Oreille.
- To ensure that wildlife mitigation proceeds expeditiously in the Mountain Columbia Province, Idaho proposes a Five-Year Wildlife Habitat Acquisition Fund to be implemented by the Albeni Falls Interagency Work Group.

Finding: The Council did not adopt or reject recommendations for specific high priority actions or projects. The Council assumed that all of the projects recommended might merit high priority funding. The key in this one-time-only project selection process will be the extent to which any proposed project satisfies the high priority criteria for a funding recommendation, an evaluation that will be made in the project review process by the ISRP, the National Marine Fisheries Service, the other fish and wildlife managers, Bonneville and the Council.

Source: City of Portland
Recommendation No. 45

Recommendation: The City of Portland recommended the following early action projects:

- Kelley Creek Culvert Replacement
- Willamette Fish Study: Effects of Bank Treatment and Near Shore Development On Anadromous and Resident Fish in the Lower Willamette River
- Ecosystem Diagnosis and Treatment (EDT) Analysis for the Sandy Basin, Lower Columbia River Basin, State of Oregon
- Oaks Bottom Wildlife Refuge Reconnection

Finding: The Council did not adopt or reject recommendations for specific high priority actions or projects. The Council assumed that all of the projects recommended might merit high priority funding. The key in this one-time-only project selection process will be the extent to which any proposed project satisfies the high priority criteria for a funding recommendation, an evaluation that will be made in the project review process by the ISRP, the National Marine Fisheries Service, the other fish and wildlife managers, Bonneville and the Council.

Source: Columbia River Alliance
Recommendation No. 39

Recommendation: The Columbia River Alliance recommended the following high priority actions:

- Introduce mammalian predators to control bird populations on Rice Island and elsewhere.
- Allow limited hunting for marine mammals to control populations; turn over percentage of license revenues to habitat restoration projects.

Finding: The Council did not adopt or reject recommendations for specific high priority actions or projects. The Council assumed that all of the projects recommended might merit high priority funding. The key in this one-time-only project selection process will be the extent to which any proposed project satisfies the high priority criteria for a funding recommendation, an evaluation that will be made in the project review process by the ISRP, the National Marine Fisheries Service, the other fish and wildlife managers, Bonneville and the Council.

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