

Spokane

Review Summary

The Spokane Subbasin Plan substantially meets most of the scientific elements of a subbasin plan called for in the Council's 2000 Fish and Wildlife Program and Subbasin Planning Technical Guide. Most of the ISRP/AB concerns are at a moderate level, with the exception that the plan lacks a complete research, monitoring, and evaluation plan.

A notable strength of the subbasin plans in the Intermountain Province is their consistency and direct linkage to the Fish and Wildlife Program and its base principles. Many of the Fish and Wildlife Program Principles are generally (and often nicely) reflected in the plan, often largely via Province coordination and influence, it appears. However, the planners' choice to focus on strategies they feel are most consistent with Bonneville's mitigation responsibilities detracts from the ecological approach that is central to the base principles. This plan has a poor balance of hydropower system and more holistic ecosystem issues.

Assessment

The planning team selected five aquatic focal species: redband/rainbow trout, mountain whitefish, kokanee, largemouth bass, and Chinook salmon. The terrestrial assessment is organized around four focal habitats—wetlands, riparian and riparian wetlands, steppe and shrub steppe, and upland forest—and does not consider focal species. The Assessment provides much hydrologic detail and appears to present detail on aquatic focal species according to availability of information. Synthesis and holism are lacking, as might be expected when various plan elements are completed simultaneously rather than sequentially, such that each component builds upon the previous one. Greater evaluation and synthesis could be done with the information already included within the Assessment.

The combined discussions of environmental conditions and focal species contain detail relevant to resource restoration. The overview provides context for the rest of the plan. The Assessment describes the current status of aquatic focal species to the degree that limited data allow.

The Assessment analyzes environmental effects on fish via QHA and has some narrative description of anthropogenic problems. It needs to relate QHA output to the ecology of the focal species via discussion. The issues of water quality and quantity are presented in detail. Wildlife populations are not addressed in detail, because emphasis is on assessment of terrestrial focal habitats.

The plan provides fairly detailed descriptions of current limiting factors, for the aquatic focal species and the terrestrial focal habitats. Historic descriptions are briefer. QHA is used to compare present to historic conditions for eleven attributes for each focal species. Limiting conditions for terrestrial species are addressed in terms of the dam mitigation HU targets. This is a reasonable assessment from the point of view of Bonneville's mitigation responsibilities, but it should be a more complete assessment of the entire subbasin ecosystem.

Inventory

The overall impression of the Inventory is that it thoroughly describes ongoing and completed projects, especially when taken together with the provincial plan. It summarizes the gaps that need to be addressed. It is well organized and presented. This accounting of existing restoration and protection activities is done systematically for aquatic species, including an identification of areas needing attention. Gaps for terrestrial species are addressed through the dam construction mitigation HU targets, which are about 51% completed. The pie-chart representations should either be omitted or be revised to more truly depict program emphases.

Management

The Management Plan is strong on specifying objectives and strategies that address the limiting factors identified in the Assessment and that are consistent with province and basin-level objectives. The RME section is incomplete; it needs more specifics. The strategies need to be further developed and extended into plans for adaptive management, but this still constitutes a good start.

Most of the plan's biological objectives are written in specific, measurable terms. A strength of the Intermountain Province's approach is close linkage among subbasin, province and basin levels. Goals and objectives of the Fish and Wildlife Plan are the framework within which province and subbasin goals and objectives are developed. The subbasin's Management Plan objectives are explicitly tiered to those of the higher levels of aggregation.

The Management Plan begins with a summary of limiting factors identified in the Assessment. Objectives are developed to address these limiting factors. The biological objectives are, for the most part, specific and measurable. Judged by the Inventory, the objectives seem to complement the programs of tribal, state and federal land or water quality management agencies in the subbasin. The objectives also make explicit reference to WDFW and tribal plans. The linkage of the strategies to the subbasin objectives, vision and Assessment is made well. The plan is internally consistent.

Prioritization is included in the Management Plan. A systematic approach is taken to assigning priorities for aquatic species. The terrestrial focus is on completing mitigation HUs, but strategies are also prioritized. Category-one and -two objectives are not ranked against each other. The prioritization done thus far is a major accomplishment.

Research needs are identified in the province plan but not in the subbasin plan. The RME plan would be made more useful by expanding on its tabular material with more text on explanation and rationale. The research could be tied closer to the objectives. This research section flowed more from the Management Plan than from the Assessment and Inventory; it should link back to them more clearly.

The monitoring and evaluation plan is a good beginning, but more work is needed on it, namely, coordination for standard protocols; plans for cooperative monitoring of projects; definition of monitoring indicators; and development of infrastructure for RME quality assurance, data management/analysis, data reporting, and data archiving.

Importantly, adaptive management is not addressed in the RME plan. The logic path presentations in the province plan do incorporate this, but the subbasin RME plan does not seem to refer back to that. Failure to explain how the information from M&E will be used for evaluation, and how the M&E work outlined in this section will be used in adaptive management stands to hamper effectiveness of restoration and protection in the subbasin. There is a good research opportunity in the Spokane subbasin because of the proximity of four universities: EWU, Gonzaga, WSU, and the U of I. In the future, planners should consider utilizing these institutions.

Review Checklist

I. The Subbasin Assessment		
(See generally pages 4-6, 9-10 of the Technical Guide; the checklist is derived from 18-24 of the Technical Guide.) Reviewers should consider the soundness, completeness, analytical approach, and transparency (documentation of methods and decision-making process) of the following components of a subbasin assessment.		
I. A. Subbasin Overview		
<i>General Question to be addressed: Does the assessment provide the geographical, demographical, and environmental context for fish and wildlife resources in this subbasin? The Council specifically asked that the independent scientific review evaluate whether the subbasin assessment was thorough and substantially complete. The following checklist is to aid reviewers in that determination.</i>		
I. A.1. General Description		(Y)es, (P)artial, (N)o Need for additional treatment (0-4)
I.A.1.1	Does the assessment provide a general orientation to the subbasin (location, size, distinguishing natural and cultural features, land use, land ownership) and an overview of jurisdictional authorities (state, county, federal lands, tribal lands and fishing rights)?	
Reviewers: A good general orientation is provided in the subbasin plan as well as in the provincial plan, although the Assessment has more information on the subbasin's physical description than on human uses or cultural features.		
I.A.1.2	Does the assessment provide a general description of the subbasin's macro-environment (geology, climate and weather, land cover, vegetation) and of the subbasin's water resources (hydrography and watersheds, hydrologic regimes, water quality, riparian and wetland resources), water uses, and modifications to water resources (hydropower projects and operations, water diversions, channel modifications)?	
Reviewers: The Assessment offers good detail on water resources, weather patterns, and hydrographs. Less information is provided about vegetation.		
I.A.1.3	Does the assessment provide a general description of anthropogenic disturbances to the aquatic and terrestrial environment, organized by the source of disturbance (urbanization, agriculture, forest practices, water development, mining, transportation, and other)?	
Reviewers: A brief general description of the current anthropogenic disturbances from agriculture, urbanization, road construction, and forest practices is provided in both the subbasin plan and in the provincial plan.		

I.A.1.4	<p>Does the assessment provide a list of native and non-native fish and wildlife species present in this subbasin including those species that:</p> <ul style="list-style-type: none"> a. have been designated as threatened or endangered under the Federal Endangered Species Act or state equivalents, b. have been recognized by applicable federal, state, or local resource management agencies, or by the Nature Conservancy or state heritage program, as being especially rare or significant in the local area, c. have special ecological importance within the subbasin, d. are recognized by Native American tribes as having special cultural or spiritual significance, or e. are not native to this subbasin? 		
<p>Reviewers: The Assessment lists twenty native and fifteen nonnative aquatic species. Current knowledge of species abundance and distribution is thoroughly described by subarea. Fish assemblage information resulting from recent surveys in various areas is summarized. Assessment of terrestrial resources appropriately emphasizes focal habitats, not focal species.</p>			
I.A.1.5	<p>Does the assessment identify plants that have been designated as threatened or endangered under the Federal Endangered Species Act or state equivalents, and/or that are recognized by Native American tribes as having special cultural or spiritual significance, or (optional) that have special ecological importance within the subbasin?</p>		
<p>Reviewers: Few details are given on plant species of interest. The plan does emphasize the planting of native plant species. Plants merit more attention since food plants are culturally significant, often found in highly impacted plant communities important to focal species, and may also be a substitution for food and cultural materials lost with the anadromous fish.</p>			
<p>I.A.2. Subbasin in the Regional Context</p>		<p>(Y)es, (P)artial, (N)o</p>	<p>Need for additional treatment (0-4)</p>
I.A.2.1	<p>Does the assessment adequately describe how this subbasin fits within its regional context (size in relation to the total Columbia Basin, placement within the ecological province and relationship to other subbasins in this province, qualities that distinguish this subbasin from others in the province)?</p>		
<p>Reviewers: The linkages between this subbasin and other subbasins, the province, and the region are addressed well in the provincial plan.</p>			
I.A.2.2	<p>Does the assessment adequately describe this subbasin's relationship to Endangered Species Act planning units (NOAA Fisheries-designated evolutionarily significant units (ESU) and U.S. Fish and Wildlife Service-designated bull trout planning units.¹) where this information was available during the planning process?</p>		
<p>Reviewers: Bull Trout and westslope cutthroat are apparently present in the subbasin, and redband rainbow (a focal species) definitely are, but there is almost no discussion of the subbasin's relationship to ESA. Bull trout and westslope cutthroat should have received more attention. This relationship is described for federal ESA-listed, state-listed, and other priority terrestrial species.</p>			

¹ The USFWS bull trout planning hierarchy includes, from large areas to small, distinct population segments, recovery units, recovery sub-units, core populations, core areas, and local populations. A subbasin would typically correspond to a recovery unit or sub-unit.)

I.A.2.3	Does the assessment adequately summarize external environmental conditions that might have an effect on fish and/or wildlife in this subbasin (the ocean, the estuary, the mainstem downstream from the subbasin, and, as relevant, upstream areas and adjacent subbasins)?		
Reviewers: Most of the discussion on external environmental conditions that have an effect on fish and/or wildlife in the Spokane subbasin concerns the upstream effects from dams and mining in the context of water availability and quality. The plan makes no discussion of out-of-basin effects on wildlife, other than hydrosystem effects.			
I.A.2.4	Does the assessment adequately identify macroclimate and human occupation and use trends that may affect hydrological or ecological processes in this subbasin over the long-term (50 years into the future and beyond)?		
Reviewers: Human occupation and use trends are were described in the Overview of the IMP plan, and are well described by subarea in the subbasin plan.			
Summary comments and evaluation on the Subbasin Overview: Does the assessment provide the geographical, demographical, and environmental context for fish and wildlife resources in this subbasin?			
Reviewers: The combined discussions of environmental conditions and focal species contain good detail relevant to resource restoration. This overview is very helpful to this reviewer in understanding the context for the rest of the plan. Further discussion of ESA threatened and endangered fish would augment the plan.			

I.B. Species Characterization and Status			
<i>General question: Does the assessment adequately describe the current status of fish and wildlife focal species?</i>			
Note to reviewers: for this section of the review, the checklist should be applied to each focal species. Please identify which species your evaluation applies to in the comment field. Use the ranking fields (Y,P,N; 0-4) to give an overall evaluation across all focal species. Note differences among approaches to species in the comment field. If necessary, once the plans are received, assignments will be made to cover an individual species or a series of focal species.		(Y)es, (P)artial, (N)o	Need for additional treatment (0-4)
I.B.1. Does the assessment adequately identify a series of focal species that will be used to characterize the status of fish and wildlife species within the subbasin? These should include one or more wildlife, resident fish, and, where present, anadromous fish species. Anadromous fish may also be included in subbasins where they were historically present and where there is a reasonable probability that these fish could be restored to sustainable levels. Criteria suggested for selecting focal species include a) designation as Federal endangered or threatened species, b) local ecological significance, ² and c) cultural significance.			

² Species that could be considered under the ecological significance criterion might include those that: a) are particularly rare within the subbasin (regardless of ESA classification), or b) perform a particularly important or unique ecological function.

<p>Reviewers: Focal species are redband/rainbow trout, mountain whitefish, kokanee, largemouth bass, and Chinook salmon. For terrestrial species, four focal habitats are selected: wetlands, riparian and riparian wetlands, steppe and shrub-steppe, and upland forest. A good description of each is presented. Twenty-three terrestrial priority species are listed. There is no explicit discussion of the availability of data to monitor aquatic focal species. Many of them appear not to have significant data available. An aquatic threatened or endangered species should have been selected to complement the group.</p>		
<p>I.B.2. Does the assessment adequately identify and characterize focal species populations; i.e. delineate unique population units and, as applicable and where information is available, meta-populations, subpopulations and/or other genetic/behavioral groupings used by scientists or managers?</p>		
<p>Reviewers: The Assessment appears to describe population attributes to the degree that information is available. More detail is provided for redband/rainbow trout than for the other focal species. Very little detail is provided for Chinook, and reference is made to another subbasin plan for information on Lake Roosevelt Chinook. The terrestrial focal species are described in varying degree of detail. All told, the Assessment's presentations on populations are too brief.</p>		
<p>I.B.3. Does the assessment describe the current and historic status of each focal species population and summarize available population data (abundance, productivity, spatial structure, etc., with particular emphasis on trend data)?</p>		
<p>Reviewers: The Assessment offers an excellent review of historical status of aquatic focal species populations. Less is known about historical status of redband/rainbow trout than about this aspect of other species, but their current status is thoroughly described and abundance reported by subareas with associated physical conditions. The present abundance and distribution of other focal species are described in less detail, with qualitative assessments of trends. Information on abundance and distribution of terrestrial species is qualitative for the most part. The Management discussion seems skimpy, but maybe this is because management is according to state policy and regulations, and does not vary within the subbasin?</p>		
<p>I.B.4. Does the assessment adequately describe the population's life history, including identifying distinct life stages?</p>		
<p>Reviewers: The subbasin Assessment appears to provide information to the degree known, but it does not have an explicit life-stage discussion. This level of detail is not presented for most of the terrestrial species.</p>		
<p>I.B.5. Does the assessment adequately characterize the genetic diversity of the population, especially regarding possible effects of artificial production? Specifically does the assessment describe the historic and current status of introductions, artificial production, or captive breeding programs in this subbasin or affecting the subbasin through straying or other means, and describe the relationship between the artificial and naturally produced populations?</p>		
<p>Reviewers: Genetic information is reported for redband/rainbow trout, supplemented by good maps. Little genetic information appears to be available for the other species.</p>		

I.B.6. Does the assessment adequately describe historic and current harvest, including both in-subbasin harvest and downstream or ocean harvest affecting the focal species?		
Reviewers: The Assessment describes current management authorities, approaches and regulations, but for most species harvest is not reported. Deer and grouse harvest is summarized for a five-year period.		
Summary comments and evaluation on the Species Characterization and Status Subsection: Does the assessment adequately describe the current status of fish and wildlife focal species?		
Reviewers: The Assessment describes the current status of fish and wildlife focal species to the degree that limited data allow. The technical planning team obviously knows the resource well.		

I.C. Environmental Conditions <i>General question to be addressed: Does the assessment adequately describe the effect of the environment on fish and wildlife populations?</i>		
I.C.1. Environmental Conditions within the Subbasin		(Y)es, (P)artial, (N)o Need for additional treatment (0-4)
I.C.1.1	Does the assessment adequately describe the current condition of the environment in this subbasin, and characterize the condition of the environment under the following reference conditions: a) historic, ³ b) potential, ⁴ c) future/no new action, ⁵ and the potential condition of aquatic and terrestrial habitats within the subbasin? Does the assessment include a determination of the difference between current conditions and the various reference conditions?	
Reviewers: The Assessment offers a good discussion of water quantity, timing and quality issues, supplemented by graphs. These are linked to climate. A good discussion of environmental conditions by subarea is presented. QHA is used in the focal species section to assess restoration potential to reference conditions, but the "environmental conditions" section does not explicitly address future or no-action scenarios.		
I.C.1.2	Does the assessment adequately classify 6 th field HUCs within the subbasin according to the degree to which each area has been modified and the potential for restoration?	
Reviewers: Subareas are characterized according to the degree to which each area has been modified and the potential for restoration, but no mention of 6 th field HUC units is made. QHA was used to analyze stream reaches. IBIS was used for current wildlife.		
I.C.2. Out-of-Subbasin Effects and Assumptions		

³ The historic condition refers to the state of the environment at the time of European settlement, or 1850.

⁴ The potential condition is defined as the optimal condition for the subbasin in the year 2050, but it acknowledges cultural modifications that are not reversible such as urbanization.

⁵ The future/no new action condition is the state of the environment in 2050 assuming that current trends and current management continues.

I.C.2.1	Does the assessment identify factors outside of the subbasin that have a significant effect on each focal species, with particular attention to bottlenecks? These might include effects associated with upstream conditions, downstream conditions, and, in the case of migratory wildlife, conditions in adjacent subbasins. Outside effects are particularly relevant for anadromous fish and may include mainstem passage and habitat, estuary conditions, ocean conditions, and harvest.		
Reviewers: A short description of out-of-subbasin effects is provided. They are heavy metal contamination from mining, river regulations, dam construction, and the introduction of nonnative species. The Assessment does not offer very much information on out-of-subbasin effects on wildlife.			
I.C.2.2	For each focal species, does the assessment establish assumptions for each external effect that can be used to calculate the effects of external conditions on the productivity and sustainability of fish and wildlife within this subbasin?		
Reviewers: The Assessment does not appear to adequately establish assumptions on the effects of out-of-basin factors on fish and wildlife in the subbasin.			
I.C.3. Environment / Population Relationships			
For each focal species, does the assessment adequately identify, for each life stage, environmental factors that are particularly important for the species' survival and determine the characteristics that constitute optimal conditions for species health? Does the assessment adequately describe and make a finding regarding the environment's ability to provide such optimal conditions, or conditions that support the long-term viability of these populations.			
Reviewers: The Assessment provides key environmental factors in general terms of problems created by anthropogenic problems, by species. The information is not presented for life stages and not in terms of specifying optimal conditions or the likelihood of achieving them. The plan contains thorough descriptions of physical conditions (flow regimes, etc.) in water bodies, but does not relate these to life history needs of fishes.			
Summary comments and evaluation on the Environmental Conditions Section: Does the assessment adequately describe the effect of the environment on fish and wildlife populations?			
Reviewers: The Assessment analyzes environmental effects on fish via QHA and has some narrative description of anthropogenic problems. It needs to relate QHA output to the ecology of the focal species. The issues of water quality and quantity are presented in detail. Wildlife populations are not specifically addressed.			
I.D. Ecological Relationships			<i>Need for additional treatment (0-4)</i>
<i>Question to be addressed: Does the assessment describe the key inter-species relationships and the key functional relationships?</i>			

I.D.1. Inter-species Relationships

Does the assessment adequately identify important inter-species relationships or interactions, both positive and negative, with specific attention to relationships between anadromous fish and wildlife and specifically identify: 1) wildlife species and habitats that may be influenced, positively or negatively through direct effects of changes in fish abundance or fish community composition; 2) fish species and habitats that may be influenced, positively or negatively, through direct effects of changes in wildlife abundance or wildlife community composition; and 3) key species relationships within this subbasin based on the above?

Restrictions: The relationships between resident fish and wildlife were not adequately considered. The Assessment does not adequately address interactions of fish species.

I.D.2. Processes and Functions

Does the assessment adequately identify key ecological functions for species within this subbasin and assess the current status of ecological processes and functions in the subbasin?

Reviewers: Key ecological processes and functions are not adequately described for aquatic or terrestrial species.

I.E. Interpretation and Synthesis / Limiting Factors and Conditions

I.E.1. Limiting Factors and Conditions

Does the assessment adequately describe:

1) **Historic factors or conditions** that led to the decline of each focal species and of ecological functions and processes?

2) **Current key factors or conditions** within and without the subbasin that inhibit populations and ecological processes and functions relative to their potential.

Reviewers: The Assessment provides fairly detailed descriptions of current limiting factors, to the degree known, for aquatic focal species and terrestrial focal habitats. Historic descriptions are briefer. QHA is used to compare present to historical conditions for eleven attributes for each of the focal species. The terrestrial species limiting conditions are addressed through the dam mitigation HU targets, which are about 51% met. Key factors could be better related to the life stages of the fishes.

I.E.2. Key Findings

Is the knowledge gained through the assessment adequately synthesized in regard to: 1) the status of species, 2) the status of the subbasin environment, 3) the biological performance of focal species in relationship to the environment, 4) the health of the overall ecosystem, 5) potential conflicts and compatibilities between individual species and ecological processes, 6) a determination of the key factors that impede this subbasin from reaching optimal ecological functioning and biological performance?

Reviewers: The Assessment offers a fair synthesis of what is known about the subbasin's environment, but the ecological relationships are not well addressed. For terrestrial species, the focus is on meeting the mitigation HU targets. The Assessment puts much emphasis on the effects of the hydropower system, but not enough on other problems.

I.E.3. Subbasin-wide Key Assumptions/Uncertainties (“Working Hypothesis”)		
Does the assessment describe the key assumptions (including uncertainties) that have been made in the “Key Findings” above, and document the data sources and/or analytical tools relied upon?		
Reviewers: The plan’s guiding principles and working hypotheses are developed at the provincial level, in an explicit attempt to integrate and provide consistency across subbasins.		
	<p>Overall impression and evaluation of the Assessment: Does the assessment adequately synthesize the information regarding the health and functioning of this subbasin ecosystem? Does it adequately: a) bring together the single-species and community assessments to form a holistic view of the subbasin’s biological and environmental resources, b) provide a foundation for the development of scientific hypotheses concerning ecological behavior and the ways that human intervention might prove beneficial? As needed elaborate on your evaluation of the various Sections enumerated above. If the plan provides additional analysis beyond what is laid out above in the checklist please comment here (e.g., socio-economic descriptions or analysis).</p>	
Reviewers: The Assessment provides much hydrologic detail and appears to treat aquatic focal species according to availability of information. It could probably do better in creating a complete subbasin-level description. Synthesis and holism are lacking as might be expected when various plan elements are completed simultaneously rather than sequentially in such a way that each component builds upon the previous one.		

II. The Inventory		
<i>(This checklist section was developed from pages 11-12 of the Technical Guide.)</i>		
<i>Reviewers should consider the soundness, completeness, analytical approach, and transparency (documentation of methods and decision-making process) of the following components of a subbasin inventory, specifically whether the inventory includes an assessment of the adequacy of current legal protections, plans, and projects to protect and restore fish, wildlife, and ecosystem resources. Does the inventory adequately synthesize past activities and their biological achievements? Planners were requested to, as applicable, describe the extent to which these programs and activities extend beyond the subbasin to a larger scale (provincial and basin-wide).</i>		
II.A. Existing Protection		<i>(Y)es, (P)artial, (N)o</i>
		<i>Need for additional treatment (0-4)</i>
II.A.1	Does the inventory adequately identify areas with protections through stream buffers, municipal or county ordinances, conservation designations, or water resources protection?	
Reviewers: A brief section on existing protections describes existing laws and authorities. ESA protections for terrestrial species are described. This is a good presentation.		
II.A.2	Does the inventory assess the adequacy of protections for fish, wildlife, and ecosystem resources?	
Reviewers: The adequacy of adequacy of protections for fish, wildlife, and ecosystem resources is not comprehensively assessed.		
II.B. Existing Plans		
II.B.1	Does the inventory identify and review applicable local, state, tribal, and/or federal fish and/or wildlife management plans and water resource management plans that affect fish and wildlife?	

Reviewers: The management programs of state, tribal and federal entities are described in the provincial plan. The subbasin plan describes conservation district programs.		
II.B.2	Does the inventory assess the extent to which existing plans are consistent with the subbasin assessment and their adequacy in protecting and restoring fish, wildlife, and ecosystem resources? (It is possible that this analysis is done in another section of the plan, e.g. in the management plan.)	
Reviewers: The consistency of existing plans with the subbasin plan is not assessed.		
II.C. Management Programs / Restoration and Coordination Projects		
Does the inventory identify management programs implemented through on-the-ground restoration and conservation projects that target fish and wildlife or otherwise provide substantial benefit to fish and wildlife? These include, at a minimum, those implemented within the past five years regardless of funding source.		
II.C.1	Does the inventory identify ongoing or planned public and private management programs or initiatives that have a significant effect on fish, wildlife, water resources, riparian areas, and/or upland areas? ⁶	
Reviewers: The Inventory offers a detailed description of ongoing projects, some with descriptions of monitoring programs and performance outcomes.		
II.C.2	For each management program (or project where not clearly part of an overarching management program), does the inventory describe the program, project or activity; identify the management or lead entity; identify how the program/project was authorized and who is responsible for implementation; identify the funding source; and identify the relationship to other activities in the subbasin?	
Reviewers: The requested information is provided for both aquatic and terrestrial species.		
II.C.3	For each management program (or project where not clearly part of an overarching management program), does the inventory identify limiting factors or ecological processes the activity is designed to address?	
<p>Reviewers: For aquatic species, a summary section addresses the extent to which ongoing projects are addressing limiting factors. The Inventory’s aquatic section’s two pie charts (which also pertain at least partly to wildlife) undoubtedly are intended to represent the proportions (%) of effort being exerted in the subbasin on (a) various limiting factors and (b) various “strategies”—and readers certainly will interpret them that way. The percentages are based on numbers of projects. This will mislead readers because many projects are very unequal in amount of effort that goes into each. Either the pie charts should be deleted from the plan or they should be revised to represent the amounts of money spent on each limiting factor and strategy. Money spent would more nearly (though still roughly) represent effort or emphasis in existing programs than does mere number of projects. The revised pie charts should then be used in narrative discussion. They need text synthesis and caveats.</p> <p>For terrestrial species, the focus on meeting the construction mitigation HUs.</p>		

⁶ Among other programs, the Technical Guide requested for artificial production programs that the inventory include and summarize relevant HGMPs (both BPA-funded and non-BPA funded programs) and Council APRE evaluations?

II.C.4	For each management program (or project where not clearly part of an overarching management program), does the inventory summarize accomplishments/failures of activity		
Reviewers: Accomplishments of management programs are summarized for completed projects. An overall evaluation of success or failure is not presented.			
II.C.5	Does the inventory adequately relate the assessment to the existing activities and identify the gaps between actions that have already been taken or are underway and additional actions that are needed to address the limiting factors and meet recovery and other goals, and identify inadequacies in both design and implementation?		
Reviewers: This assessment of existing restoration/protections activities is done systematically for aquatic species, including an identification of areas needing attention. Gaps for terrestrial species are addressed through the dam construction mitigation HU targets, which are about 51% completed.			
	<p>Overall impression and evaluation of the Inventory: As needed elaborate on your evaluation of the various Sections enumerated above. If the plan provides additional information or analysis beyond what is laid out above in the checklist please comment here (e.g., socio-economic descriptions or analysis).</p>		
<p>Reviewers: The overall impression of the Inventory is that it is a thorough description of ongoing and completed projects. It makes a good summary of the gaps needing to be addressed. It is well organized and presented. There is good opportunity with WDOE and AG to address CAFOs. The planners did not tie the subbasin plan to ongoing DOE watershed planning efforts (2514).</p> <p>Some specific comments:</p> <p>p 23-11 - In regard to accomplishments, the plan says that the stocking of triploid rainbow trout, "Contributed to a very successful winter steelhead fishery along Lake Roosevelt," but how many were caught, what was the catch rate (fish/hour of angling), and what percentage of the winter steelhead fishery was composed of the triploid fish?</p> <p>Also the plan says, "planted 12,000 pounds of catchable triploid steelhead trout all along the reservoir from Spring canyon to as far north as Northport" and "planted 100,000 fingerling trout from the spring transfers," but what were the results in terms of harvest?</p> <p>Page 23-11 - Rosgen 1991 is referenced, but this study does not exist in the reference list for this section of the plan.</p>			

III. The Management Plan

(Derived from pages 12-16 of the Technical Guide.)

Reviewers should consider the soundness, completeness, analytical approach, and transparency (documentation of methods and decision-making process) of the following components of a subbasin management plan.

These checklist tables incorporate Council Question 4, Consistency with the Provincial- and Basin-level Program: Are the vision, objectives, and strategies proposed in the subbasin management plan consistent with those adopted in the program for the province and/or basin levels? This is a three-part question and reviewers must be familiar with

the vision, objectives, and strategies described in the 2000 Fish and Wildlife Program (pp. 13-33) and, for mainstem subbasin plans, the Mainstem Amendments (pp.11-28).		
III.A. The Vision for the Subbasin Does the Vision Section of the Management Plan adequately 1) describe the desired future condition for the subbasin; 2) describe a vision that will drive development of the biological objectives and thereby the strategies that are incorporated to change conditions within the subbasin; and 3) incorporate the conditions, values and priorities of the subbasin in a manner that is consistent with the Vision described in the Council's 2000 Fish and Wildlife Program? (Council Question 4 to the ISRP):	(Y)es, (P)artial, (N)o	<i>Need for additional treatment (0-4)</i>
Reviewers: The plan utilizes a general vision statement that has been developed at the province level. The province document makes frequent and explicit reference to the Fish and Wildlife Plan's vision and objectives. The Spokane vision is a slightly more specific vision nested within the IMP's statement.		
III.B. Biological Objectives Does the Biological Objectives Section of the Management Plan adequately describe physical and biological changes within the subbasin needed to achieve the vision?		
Reviewers: Most of the plan's biological objectives are written in specific measurable terms. The strategies are also specific and measurable.		
III.B.1. Are the biological objectives consistent with basin-level visions, objectives, and strategies adopted in the program? (Council Question 4) The 2000 Fish and Wildlife Program, pages 16-18, provides general descriptions for basin-level goals, objectives, and strategies. The Mainstem Amendments provide additional biological objectives as well on pages 11-14. ⁷		
Reviewers: A strength of the IMP's approach is close linkage among subbasin, province and basin levels. Goals and objectives of the Fish and Wildlife Plan are the framework within which province and subbasin goals and objectives are developed. The subbasin's Management Plan objectives are explicitly tiered to those of the higher levels of aggregation.		
III.B.2. Are the biological objectives based on the subbasin assessment? (This question relates to the Logic Path in the subbasin plan. Question III.C.1 is a similar question for the Strategies Section.)		
Reviewers The Management Plan begins with a summary of limiting factors identified in the Assessment. Objectives are developed to address these limiting factors.		
III.B.3. Where possible, are the biological objectives empirically measurable and based on an explicit scientific rationale; i.e., quantitative with measurable outcomes?		
Reviewers: The plans biological objectives are, for the most part, specific and measurable.		
III.B.4. Are biological objectives identified for both the short and long-term?		
Reviewers: The plan does not explicitly differentiate between short-term and long-term, although several objectives have target dates attached.		
III.B.5. Are the biological objectives complementary to programs of tribal, state and federal land or water quality management agencies in the subbasin?		

⁷ Given the Fish and Wildlife Program's emphasis on building from subbasin level management plans upward into provincial and basin level objectives, reviewers should evaluate whether the plans have a framework that will facilitate the development and linkage of objectives from the subbasin to the province to the basin.

Reviewers: Judged by the Inventory, the biological objectives probably complement the programs of tribal, state and federal land or water quality management agencies in the subbasin. The biological objectives also make explicit reference to WDFW and tribal plans.		
III.B.6. <i>Clean Water Act</i> : Does the management plan adequately describe how the objectives and strategies are reflective of and integrated with the water quality management plan and Total Maximum Daily Load schedule within that particular state? I.e., does this subsection of the management plan adequately assess and describe the consistency-coordination-findings of the Water Quality Plan with the subbasin plan? ⁸		
Reviewers: Water quality issues and TMDL assessments are addressed in the plan.		
III.B.7. <i>Endangered Species Act</i> : The USFWS and NOAA Fisheries are developing recovery plans for listed species (bull trout, white sturgeon, salmon). Recognizing that those ESA-based efforts are in various states of completion across the Columbia basin (some efforts are well underway, others just beginning), does the management plan adequately describe how the objectives of the subbasin management plan are reflective of and integrated with the ESA-based goals for listed species within the subbasin? ⁹		
Reviewers: Reference to ESA recovery plans is made for terrestrial species, but it appears to be largely ignored for aquatic species.		
III.B.8. If there are disagreements among co-managers that translate into differing biological objectives, are the differences and the alternative biological objectives fully presented? (The Council’s review will examine whether the plan is consistent with legal rights and obligations of fish and wildlife agencies and tribes with jurisdiction over fish and wildlife in the subbasin, and agreed upon by co-managers in the subbasin.)		
Reviewers: The Management Plan mentions no disagreements. The IMP comment covers this. Note that the province plan describes the participation process in planning and the way the individual plan describes differences of opinions and what entity dominated the final choices.		

III. C. Strategies¹⁰
III.C.1. Internal Consistency of the Plan. Does the Strategies Section of the Management Plan explain the linkage of the strategies to the subbasin biological objectives, vision and the subbasin assessment? (Council Questions 2 and 3) ¹¹

⁸ *Clean Water Act*: The Water Quality Management Plans developed for watersheds within each state includes the following information: 1) Management measures tied to attainment of TMDL; 2) Timeline for implementation; 3) Timeline for attainment of Water Quality Standards; 4) Identification of responsible parties; 5) Reasonable assurance of implementation; and 6) Monitoring and evaluation. The status of Total Maximum Daily Loads (TMDLs) is generally the responsibility of the state, which is delegated the responsibility for implementing the CWA. Each state has a schedule for completing TMDLs, which include a Water Quality Management Plan that describes how the allocations in the TMDL will be met. Basic information on TMDL’s can generally be found on the web (see Resources).

⁹ E.g. NOAA Fisheries has provided interim targets in a letter from NOAA Fisheries to the Council, Bob Lohn to Larry Cassidy: http://www.nwcouncil.org/library/2002/nmfstargets2002_0404.pdf.

¹⁰ *Definition*: Strategies are sets of actions to accomplish the biological objectives. Strategies are not projects but instead are the guidance for development of projects as part of the implementation plan. Strategies identified within the subbasin plans will be used as a basis for Council recommendations to the Bonneville Power Administration regarding project funding. Proposed measures will be evaluated for consistency with biological objectives and strategies. The strategies may be organized by categories of habitat, artificial production, harvest, hydrosystem passage and operations, and wildlife.

¹¹ This is one of the most important review questions. The set of seven questions from Council asks the ISRP to evaluate the internal consistency, scientific soundness, and thoroughness of subbasin plans. Internal consistency means there is scientific support for the conclusion that the strategies proposed in a subbasin plan will in fact address

Reviewers: The linkage of the strategies to the subbasin biological objectives, vision and the subbasin assessment is made well. The plan is internally consistent.		
III.C.2. Consistency with the Fish and Wildlife Program. Are the Strategies proposed in the subbasin management plan consistent with those adopted in the program? (Council Question 4)		
Reviewers: The subbasin plan's consistency with the Fish and Wildlife Program is explicitly addressed.		
III.C.3. Consideration of Alternative Management Responses. Does the Strategies Section explain how and why the strategies presented were selected over other alternative strategies (e.g. passive restoration strategies v. intervention strategies)? (Council Question 5) ¹²		
Reviewers: The plan offers no discussion of alternative management strategies.		
III.C.4. Prioritization. Does the Strategies Section describe a proposed sequence and prioritization of strategies?		
Reviewers: Prioritization is included in the Management Plan. A systematic approach is taken to assigning priorities for aquatic species. For terrestrial species, the focus is on completing mitigation HUs, but strategies are also prioritized. Category one and two objectives are not ranked against each other. The prioritization done thus far is a major accomplishment.		
III.C.5. Additional Assessment Needs. Does the Strategies Section describe, if necessary, additional steps required to compile more complete or detailed assessment?		
Reviewers: The plan does not contain any information on additional assessment needs. If none are necessary then the plan should insert a statement to that effect.		
III.C.6. Clean Water Act: Does the management plan adequately describe how the strategies are reflective of and integrated with the water quality management plan and Total Maximum Daily Load schedule within that particular state?		
Reviewers: Water quality issues and TMDL assessment are referenced in the plan. Explicit reference is made to existing TMDL implementation plans.		
III.C.7. Endangered Species Act: Recognizing that ESA-based efforts are in various states of completion across the Columbia basin, does the management plan adequately describe how the strategies of the subbasin management plan are reflective of and integrated with the ESA-based goals for listed species within the subbasin?		

the problems identified by the subbasin assessment; i.e., does the Strategies Section take into account not only the desired outcomes, but also the physical and biological realities of the subbasin environment. The ISRP's Subbasin Plan Logic Path flow chart, attached below, provides a straightforward illustration of the logic path reviewers should look for in subbasin plans. Rick Williams, ISRP chair, developed and has presented this flow chart to subbasin planners around the basin, emphasizing the importance that subbasin plans demonstrate a clear logic path.

¹² The 2000 Fish and Wildlife Program directs that the subbasin management plan's strategy section must include an explanation of how and why the strategies presented were selected over other alternative strategies (e.g. passive restoration strategies v. intervention strategies). The Council does not expect subbasin plans to be structured like an Environmental Impact Statement with a list of alternative actions and descriptions of why each were not recommended. The Council's primary interest is on why and how a strategy was selected -- the rationale for the selected strategy -- which necessary includes some discussion of alternatives.

Reviewers: ESA goals are explicitly addressed, but objectives and strategies deal with threatened and endangered species.		
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III.D. Research, Monitoring, and Evaluation

This RME Checklist Section provides the review elements necessary for the ISRP/ISAB to answer *Council Question 6. Plan for Assessing Progress toward Subbasin Goals*. The ISRP/ISAB is asked to determine whether a subbasin plan includes a procedure for assessing how well subbasin objectives are being met over time. This question focuses on accountability and self-assessment, and reflects on the adequacy of the Management Plan’s research, monitoring and evaluation component. This RME component needs to be closely connected to a limiting factors analysis and the biological and environmental objectives. A prioritized RME agenda reflecting the critical uncertainties and limiting factors should be developed and presented with the detail requested below (Technical Guide pp. 14-16). *NOTE: The focus of the RME component should be on the strategy level rather than individual project level.*

Subbasin planners were encouraged to incorporate, or link their RME framework and strategies with the “regional” RM&E strategies being developed by the Pacific Northwest Aquatic Monitoring Partnership and the Columbia Basin-Wide Research, Monitoring and Evaluation (RM&E) Program, a coordinated effort developed by State, Federal, and Tribal entities in response to the Basin-wide Salmon Recovery Strategy 2000 and the FCRPS 2000 Biological Opinion. Products from these regional RME efforts could be used to meet elements of a subbasin plan’s RME section (Technical Guide pp. 14-16), particularly in the areas of monitoring protocols and methodologies. The subbasin plan should also explain how they incorporated existing monitoring guidance from state programs.

III.D.1	Research: Does the RME section of the plan describe a research agenda with specific conditions and situations identified in the subbasin that will require specific research studies to help resolve management uncertainties? Is the research agenda framed around the relationships between the assessment data and the stated vision, biological objectives, and strategies in describing uncertainties? Does the RME section prioritize research topics that are of critical importance to the subbasin?	(Yes, (P)artial, (No	<i>Need for additional treatment (0-4)</i>
Reviewers: Because RME was covered in Intermountain Provincial Plan, the ISRP/AB comments on RME provided here are the same as those provided for all the Intermountain Province subbasins. The province plan identifies research needs. These are not prioritized within the subbasin. The RME plan is essentially in tabular form. It would make this section more useful to have more text on explanation and rationale, The tables worked better for M and E than for Research. The research could be tied closer to the objectives. This research section flowed more from the Management Plan than from the Assessment and Inventory; it should link back to them more clearly.			
III.D.2	Monitoring Objectives: Does the RME subsection identify what kind of information needs to be collected in order to determine if the plan’s vision and objectives are being met? I.e., what indicator variables will be monitored?		
Reviewers: The RME subsection represents substantial progress in developing an M&E plan. Monitoring types and scales are listed by strategy and objective. Specific indicators are not identified, the section tends to be very general on this. Methods are shown (inconveniently for readers) by code numbers that refer to a “tool box,” which is a list of standard technical references. The methods lists shown for various objectives seem not to designate which method would be best for a specific purpose.			

<p>More work is needed on the M&E plan. There is inadequate statement of coordination for standard protocols. Evidence of progress towards cooperative monitoring of projects within the basin is lacking.</p>		
<p>III.D.3</p>	<p>Monitoring Indicators: Does the RME subsection identify measurable indicators of physical, chemical, biological, or socioeconomic conditions that may act as environmental signposts by which progress towards achieving the stated vision can be evaluated? E.g., does the RME subsection describe performance standards or quantitative benchmarks for reference conditions against which observations can be compared? Does the plan prioritize which indicators are most needed to answer management questions (include a short list)?</p>	
<p>Reviewers: No indicators are listed other than expressed or implied in the objectives. The IMP comment implies that the “tool box” identifies indicators, but the reviewers find that too indirect and unwieldy. Desired future conditions and measurable objectives should be explicitly discussed in terms of appropriate indicators.</p>		
<p>III.D.4</p>	<p>Data and Information Archive: Does the RME subsection describe an infrastructure to archive relevant data and meta data generated through monitoring efforts in existence for the subbasin (e.g., locally or at a regional Fish and Wildlife Program funded database such as StreamNet, the Fish Passage Center, or DART)? Specifically, does the RME subsection include discussion of quality assurance/quality control (QA/QC), data management and analysis, and data reporting?</p>	
<p>Reviewers: The plan describes no infrastructure for RME quality assurance, data management/analysis, data reporting, and data archiving.</p>		
<p>III.D.5</p>	<p>Coordination and Implementation: Does the RME subsection describe who will collect the information and data collection methods whether collection is done by a subbasin, provincial, state, or a regional entity, or a combination of entities? This should include a description of coordination with regional RME efforts in the basin (Regional Partnership, Action Agencies Research, Monitoring, and Evaluation Plan, etc) with standardization of data methods. It should also include estimates of how much the proposed M and E will cost.</p>	
<p>Reviewers: Agency responsibility for RME work is not shown. The toolbox might represent a start toward coordination, but further steps are needed. A top-down decision needs to be made on standard regional protocols.</p>		
<p>III.D.6</p>	<p>Summary Question. RME Logic Path (Evaluation and Adaptive Management): Does the subbasin plan provide a scientifically supportable procedure for refining the biological objectives as new information becomes available about how fish, wildlife, and the environment interact, and in relationship to how the plans are implemented over time? (Council Question 7) Specifically, does the RME subsection describe a scientifically sound logic path for how to test if the subbasin plan’s strategies are helping to reach the stated vision and objectives? I.e., Is the RME agenda adequately framed around the relationships between the assessment data and the stated vision, biological objectives, and strategies in describing uncertainties?</p>	
<p>Reviewers: Adaptive management is not addressed in the subbasin RME plan. The logic path presentations in the province plan do incorporate this, but the subbasin RME plan does not seem to refer back to this. Failure to explain how the information from M&E will be used for evaluation, and how all the M&E work outlined in this section will be used in adaptive management, is a major flaw that ultimately will hamper effectiveness of restoration and protection in the subbasin.</p>		

	<p>Overall impression and evaluation of the Management Plan: As needed elaborate on your evaluation of the various Sections enumerated above. If the plan provides additional analysis beyond what is laid out above in the checklist please comment here (e.g., socio-economic descriptions or analysis).</p>
<p>Reviewers: This plan is strong on the specification of objectives and strategies that address the limiting factors identified in the Assessment and that are consistent with province and basin-level objectives. It is incomplete on the RME section, which needs more specifics. The strategies need to be beefed up and extended into plans for adaptive management, but this still constitutes a good start.</p> <p>There is a good research opportunity in the Spokane subbasin because of the proximity of four universities: EWU, Gonzaga, WSU, and the U of I. In the future, planners should consider utilizing these institutions.</p>	

<p>General Council Question. Consistency with the Fish and Wildlife Program and its Scientific Foundation</p> <p>The Council asks the ISRP to evaluate a subbasin plan for its consistency with the Scientific Foundation adopted as part of the Program and with the requirements for “biological objectives” as described in the program. The core of the Council’s Scientific Foundation is a set of eight Scientific Principles:</p> <ol style="list-style-type: none"> 1. The abundance, productivity, and diversity of organisms are integrally linked to the characteristics of their ecosystem. 2. Ecosystems are dynamic, resilient and develop over time. 3. Biological systems operate on various spatial and time scales that can be organized hierarchically. 4. Habitats develop, and are maintained, by physical and biological processes. 5. Species play key roles in developing and maintaining ecological conditions. 6. Biological diversity allows ecosystems to persist in the face of environmental variation. 7. Ecological management is adaptive and experimental. 8. Ecosystem function, habitat structure and biological performance are affected by human actions. <p><i>See 2000 Fish and Wildlife Program, pages 14-15 for full detail.</i></p> <p>Questions on consistency with the objectives and strategies section of the Fish and Wildlife Program are incorporated in the table above. Consistency with the Program’s scientific foundation is interwoven throughout the checklist, and this comment table provides reviewers a place to specifically summarize and identify how well the eight principles were addressed.</p> <p>Summary comments and evaluation of the subbasin plan’s consistency with the eight principles of the Fish and Wildlife Program’s Scientific Foundation:</p>	
<p>Reviewers: A notable strength of the subbasin plans in the Intermountain Province is their consistency and direct linkage to the FWP and its base principles. Many of the Fish and Wildlife Principles are generally (and often nicely) reflected in the plan, often largely via Province coordination and influence, it appears. This plan has a poor balance of hydropower system effects and other ecosystem issues. The planners’ choice to focus on strategies they feel are most consistent with Bonneville’s mitigation responsibilities detracts from the ecological approach that is central to the base principles.</p>	

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