

# Deschutes

## Review Summary

The Deschutes Subbasin Plan is extensive and detailed, with many objectives and strategies for each of its many units. However, it is not clear how this plan can be implemented without supplying clear priorities or specific guidelines for prioritization. Priority areas are identified in the near-term, but these are not small or simple areas; the planners need to show what strategies should be implemented first and explain why. Additionally, objectives and strategies are not yet linked to an explicit monitoring and evaluation plan.

Given the complexity of the basin, the narrow choice of focal species has resulted in large parts of the ecosystem being underrepresented in the subbasin plan. Using additional focal species to serve as indicators for parts of the ecosystem that are not currently considered is likely necessary to make this an ecosystem-based Management Plan rather than just a salmon recovery plan.

The Guiding Principles cited in the plan also are very fish-centric, and seemingly too narrow for a subbasin plan that embraces fish and wildlife and habitat, and in which these are viewed as interactive components of dynamic ecosystems. Terrestrial habitat and species are given secondary consideration in this plan and need more thorough attention at every stage of the plan.

At times, it appears that this subbasin plan is primarily the Deschutes' on-going salmon recovery plan, edited into the subbasin planning format, with the addition of only a token terrestrial component and an incomplete Research Monitoring and Evaluation (RME) plan.

The planners provide little rationale for how they use EDT, how they prioritize reaches, and how they arrive at many of their conclusions.

The plan deserves credit for choosing beaver as a focal species, for selecting some focal habitats of interest, and for prioritizing reaches. For the parts of the aquatic ecosystem on which it so far has focused, it has gone farther towards being an adoptable plan than have many other subbasin plans. The major shortcomings identified in the review are largely a reflection of the plan's narrow choice of focal species that do not reflect the whole of the ecosystem, and its inadequate terrestrial component.

## Assessment

The Assessment provides a general description of the subbasin and a clear picture of the conditions and challenges planners and managers face, and it gives a very general context for fish and wildlife resources in the basin. However, major elements of that context, such as the Deschutes' relationship to other subbasins, the effects of population growth (e.g., near Bend), and an overview of wildlife and its habitat, are given only limited examination. The Assessment does not provide an adequate discussion of jurisdictional authorities, especially fishing rights. This section is concise, however, and describes well the salient features of the watershed. Anthropogenic disturbances are described in general. A positive aspect of this section is the discussion of beaver trapping and its effects. Historical conditions and changes, however, are described too generally.

The information that the Assessment provides on wildlife and their habitat is not adequate for creating a plan (although significantly more information is in the appendices, but it is not apparently used yet in the Assessment or Management Plan). Wildlife and habitat associations are adequately addressed for only a few Assessment Units such as the Lower Crooked River and the Upper Crooked River.

The descriptions of the subbasin within a regional context, and of the important ecological functions of the subbasin, are not adequate. The section on regional context is brief and deals more with jurisdiction than function and relationships. More specific information would be very beneficial, because the Deschutes is a critical subbasin, with mainstem coldwater habitats that are vital for many migrating fish, and it is also a large subbasin with a fast growing metropolitan area and diverse wildlife. The Deschutes subbasin's importance within the region and the management problems it faces need further development in the plan.

The Assessment has a general discussion of human population factors. Although the rapidly increasing human population in the basin is described, the likely future changes in human population, land use, water availability, and pollution are not addressed. The Bend area, specifically, is growing speedily, but the pressure this urban center may put on the subbasin is not discussed.

The Assessment provides no scientifically credible (quantitative or qualitative) assessment of future trends. Historical trend analysis is largely limited to the focal species.

The Species Characterization and Status Subsection adequately assess aquatic species, but the wildlife species are not thoroughly assessed. Also, the set of focal species chosen by the planners may pose some problems for effective monitoring and evaluation, and for supporting the goals of ecosystem-level protection and restoration, because the focal species do not represent the whole scope of the ecosystem, and some of them are extirpated, while others are quite rare. The exclusion of any non-salmonids leaves Pacific lamprey as the sole non-commercially important focal species. The inclusion of one or more non-salmonid species might better represent the breadth of ecologically important resources in the watershed. It appears that the planners have set up this subbasin plan as a threatened and endangered species recovery program, and this leads to a problem with the plan's consistency with the goal of overall habitat recovery, because actions that are aimed at the focal species may not be of maximum value to the whole ecosystem.

The Environmental Conditions Section describes the effect of the environment on fish and wildlife populations in general terms. The analytical tools are relied on to provide these general terms, but a species-by-species description is, for the most part, absent. Once again, the description is narrow due to the choice of focal species for both fish and wildlife that do not represent the whole ecosystem.

It appears that the planners have set up this subbasin plan as a threatened and endangered species recovery program, and this leads to a problem with the plan's consistency with the goal of overall habitat recovery, because actions that are aimed at ESA listed focal species may not be of maximum value to the whole ecosystem.

The Assessment discusses key limiting factors and provides extensive lists of them for specific subbasins. EDT is utilized to determine key limiting factors for anadromous fish. QHA is *not* used to determine key limiting factors for resident fish. Employing QHA to do this would augment the plan. There is some quantification from the EDT model in the plan, but cumulative effects are not considered. The scale at which the EDT run is conducted is not clear.

The consideration of key findings centers strongly on issues of primary importance for focal stream-dwelling fish and flowing water. Wildlife and terrestrial habitat almost disappear from consideration at this point of the plan. There is also little attention paid to the explicit resolution of conflicts and compatibilities between species or ecological processes; thus, insufficient attention is paid to the resolution of conflicts between the management tactics and the outcomes that they might suggest and be chosen to facilitate. It does not appear that key factors are thoroughly summarized or interpreted in a manner that is consistent with the Council's Fish and Wildlife Program, which gives attention to whole communities and ecosystems, as well as to the roles of species within them. The availability and uses of water seem to be overwhelmingly of concern to the Deschutes Subbasin Plan, to the detriment of its attention to species, communities, and other aspects of ecosystems. This could be correctable, as much of the Assessment and Management Plan state a watershed-level approach, but the analysis and action sections will need to be broadened accordingly so that a more full range of species and communities are given attention.

### **Inventory**

The planners conducted a comprehensive public outreach and survey campaign to secure information about programs and plans. They provide sufficient lead-in information to permit useful integration and prioritization for future fish and wildlife projects. This plan appears to have been very responsive to the Council's guidelines at least down through the development of quantitative objectives. The underlying assumption here is that improvements are needed across the basin and if completed fish and wildlife goals will be met.

The Inventory is adequate for fish and streams, but it largely ignores wildlife species and habitat. A more complete accounting of terrestrial species and habitat is necessary to maximize the utility and efficacy of the plan.

The Inventory describes ten high profile or high priority projects in considerable detail, aside from those listed in the Table I.1. While the planners indicate that these projects are scattered across the subbasin, they still receive considerable attention, effort, and expenditure. The results of the projects have demonstrated some improvement in riparian areas and channel condition.

### **Management Plan**

The plan's biological objectives are most explicit for the subbasins within the Deschutes, but they offer little specific consideration of uplands and wildlife. A thoughtful and thorough consideration of biological objects that pertain to wildlife species and habitat would strengthen the plan. Additionally, many of the biological objectives are not specific or measurable and are narrowly focused. They do not embrace ecosystem process and do not offer enough quantitative endpoints.

The strategies are explicitly linked to the subbasin’s biological objectives in some sections and then listed by subbasin in the Management Plan, but many of this plan’s strategies are really goals or are stated as tools to be used across the basin rather than as strategies (i.e., specific actions) aimed at solving specific problems.

The plan prioritizes reaches for protection and restoration, posing ten key areas that are the most important for immediate action. However, there is not enough prioritization of the extensive proposed list of fish strategies, and specific sites within reaches are not prioritized. Some criteria for judging and comparing proposals that suggest implementation specifics need to be presented in the plan. The top ten priorities remain very broad and general, and there are not priorities given among or within them.

The plan states a philosophical preference for building from strength, preserving core areas and populations, and clustering projects out from these strongholds. These choices are a good start and are consistent with the Fish and Wildlife Program, but these principles (and perhaps others) should be more formally developed to define criteria that can be used to prioritize projects in the future or to prioritize further the strategies that are in this plan.

The RME process is preliminary and not adequately described. This section is very limited and probably needs major expansion and then prioritization to serve the subbasin’s needs. The RME logic path is linked to some strategies, objectives, and research needs, but the soundness of this logic path is not demonstrated. The plan is seriously deficient in terms of coordinated monitoring and data management. The research agenda is tabularized, but it is not developed in any detail. It identifies three thematic areas of research needs: 1) life histories; 2) straying; and, 3) habitat treatments. Monitoring for bull trout and spring Chinook, steelhead, and redbands appears adequate; fall chinook is more difficult.

Overall, the RME plan is too general to meet ecosystem-monitoring needs. It only superficially describes what indicator variables will be monitored; the emphasis on restoration and the narrow choice of focal species make this especially essential, as there is no reason to expect that managing for a small number of mostly rare or extirpated species will result in diverse and productive ecosystems.

## 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**

*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.*

<b>I. A.1. General Description</b>		(Y)es, (P)artial, (N)o	<i>Need for additional treatment (0-4)</i>
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: The plan provides an adequate description of the subbasin, but it does not provide an adequate discussion of jurisdictional authorities, especially fishing rights. This section is concise and describes well the salient features of the watershed. It clearly links the summary information that is provided with more extensive treatments.		Yes	1
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: This section provides an appropriate overall description of the watershed's macro-environment and water resources. The authors clearly understand the challenges they confront well. The Assessment provides a general description of the physical environment.		Yes	0
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: The Assessment clearly defines the nature and extent of present and future challenges in terms of both in-channel and out-of-channel watershed uses, and disturbances.  Anthropogenic disturbances are described in general. A positive aspect of this section is the discussion of beaver trapping and its effects. Historical conditions and changes, however, are described too generally. A more explicit description of historical changes would improve the overview substantially.  The discussion of current practices for livestock grazing, agriculture, and logging paints an overly optimistic and complimentary picture. Oddly, urban development of farm land is not described as making major improvements in water demand.		Yes	1
I.A.1.4	Does the assessment provide a list of native and non-native fish and wildlife species present in this subbasin including those species that: 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 species that are listed or have importance to American Indian tribes in Section 3, but not in the subbasin overview. Referencing this information in the overview would improve the readability of the plan. Other ecologically important species (e.g., sculpins, suckers) are not discussed except in the list of native species.</p> <p>The Assessment provides a list of wildlife species that are listed, have importance as game species, or are ecologically important. However, the Assessment does not identify the Northern spotted owl, which is a listed species that occurs in the Deschutes basin. This omission is critical and should be addressed; the Assessment will not be complete until spotted owl is included. It is also a surprise that the Northern goshawk and selected neotropical migrants are not considered. The consideration of beaver is a positive aspect of the Assessment.</p>		Yes	1
I.A.1.5	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>Reviewers: The Assessment describes plant communities very generally and does not identify plants that have been listed as threatened or endangered by the federal ESA or the state. The plan reports all species that are of tribal importance.</p>		Partial	1
<b>I.A.2. Subbasin in the Regional Context</b>		<i>(Y)es, (P)artial, (N)o</i>	<i>Need for additional treatment (0-4)</i>
I.A.2.1	Does the assessment 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>Reviewers: The descriptions of the subbasin within a regional context and of the important ecological functions of the subbasin are not adequate. The section on regional context is extremely brief and deals more with jurisdiction than function and relationships. More specific information would be especially beneficial because the Deschutes is a critical subbasin. Its mainstem coldwater habitats are vital for many migrating fish. It is also a large subbasin with a fast growing metropolitan area and high wildlife diversity. An examination of the Deschutes subbasin's importance could be expanded in the plan.</p>		Yes	2
I.A.2.2	Does the assessment 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. <sup>1</sup> ) where this information was available during the planning process?		

<sup>1</sup> 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.)

	<p>Reviewers: The Assessment provides an adequate but brief description of ESA planning units and the relationships between planning units in the Assessment and Management Plan sections. The discussion of ongoing processes and their links to the subbasin plan is weak. Adding more detail to this discussion would strengthen the plan.</p> <p>The Assessment describes the context of the biota within ESUs and BTPUs.</p>	Yes	1
I.A.2.3	<p>Does the assessment 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)?</p>	Yes	2
	<p>Reviewers: The plan summarizes external environmental conditions that might have an effect on fish and wildlife in this subbasin. The Assessment focuses on linkages to the mainstem Columbia, but the main body of the plan does not discuss ocean and estuary conditions. Ocean conditions are discussed scantily in Appendix II. The report indicates that ocean conditions cannot be related to populations in the Deschutes. Models used by PFMC, ODFW, and NMFS, however, could contribute to an analysis of ocean effects. The plan would be augmented with a stronger consideration of ocean conditions.</p> <p>External effects on wildlife and habitat are not adequately considered. Adding an examination of the external effects on wildlife and habitat would augment the plan.</p>		
I.A.2.4	<p>Does the assessment 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)?</p>	Partial	3
	<p>Reviewers: The Assessment identifies macroclimate and human use trends, but lacks scientifically credible quantitative or qualitative assessments of future trends. Historical trend analysis is largely limited to the focal species. Adding a quantitative or qualitative assessment of future trends and expanding the historical trend analysis to the entire subbasin would strengthen the plan.</p> <p>The Assessment has a general discussion of human population factors. Although the rapid increase in human population in the basin is described, the likely future changes in human population, land use, water availability, and pollution are not addressed. The Bend area, specifically, is growing rapidly, but the pressure that urban center may put on the subbasin is not discussed.</p> <p>This plan has only a superficial consideration of climate effects on habitat and wildlife. Adding more information on the wildlife section would strengthen the plan.</p>		
	<p><b>Summary comments and evaluation on the Subbasin Overview:</b> Does the assessment provide the geographical, demographical, and environmental context for fish and wildlife resources in this subbasin?</p>		

Reviewers: The Assessment provides a very general context for fish and wildlife resources in the basin. Major elements of that context, such as the Deschutes' relationship to other subbasins, the effects of population growth (especially Bend), and an overview of wildlife and habitat, are given a limited examination. A more thorough inspection of these factors would augment the efficacy and utility of the plan.	Yes	3
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<b>I.B. Species Characterization and Status</b>		
<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 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, <sup>2</sup> and c) cultural significance.		
Reviewers: The Assessment identifies five aquatic species and seven terrestrial species based on ESA or state listings, cultural importance to the tribes, ecological importance, or value as game species.  The plan thoroughly describes the status and ecology of Chinook salmon, steelhead trout, redband trout, bull trout, and Pacific lamprey in the text and in an appendix.  Seven focal wildlife species are chosen. Changes in major habitat types that have declined significantly since non-native settlement are described in the appendix, but are discussed only briefly in the text. Adding or referencing this material to the body of the text would strengthen the plan. Even though wildlife focal species are identified, the subsequent plan does not use information or assessments of wildlife in developing objectives and strategies.  Extensive lists of candidate fish and wildlife species are developed in Appendix II.  The omission of the spotted owl is surprising and is a deficiency. The Spotted Owl has been analyzed extensively, and summaries of this work would be informative and useful.	Yes	3

<sup>2</sup> 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>The Assessment identifies a series of focal species. In most cases their inclusion is obvious, however, the exclusion of any dace or sculpins leaves Pacific lamprey as the sole non-commercially important focal species. The inclusion of one or more sculpin or dace might complete the breadth of ecologically important resources to the watershed.</p> <p>It is questionable whether choosing steelhead, which is supplemented with hatchery fish or large numbers of stray hatchery fish, is a good indicator of ecosystem health.</p> <p>It is unclear that an extirpated wildlife species (e.g., sharp-tailed grouse) can serve as a useful indicator species? Also, the fish species selected are mostly threatened and one (sockeye salmon) is extirpated. It seems some attention to persistent fishes would be useful. Except for mule deer, the focal species all are threatened, endangered, or extirpated. The planners might consider how they intend to use the focal species to determine their Management Plan, and if the narrow focus on a few threatened fishes appropriately serves the goal of fostering biodiversity and restoring or protecting ecosystems. The issue of reintroducing these species is mentioned later in the plan, but then they appear to be forgotten.</p> <p>It appears likely that better information is available on many of these species than what is provided in the document.</p> <p>The reviewers acknowledge that the EDT and QHA tools are generally designed to be used for anadromous species.</p>		
<p>I.B.2. Does the assessment 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 provides an excellent characterization of the populations of the aquatic focal species. The characterizations of the wildlife focal species are far more general, and plant populations are not discussed. The planners might look for County-level breeding records on birds to get more information on these wildlife species; the Umatilla Subbasin plan is able to gain more local information on bird populations in this way.</p> <p>The Assessment identifies, to the apparent extent known, the current and historic status of the focal species.</p> <p>Large groupings are identified, but the required diversity for the persistence of interacting sub-populations is not defined.</p>	<p>Yes</p>	<p>2</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 describes the current and historic status of the focal species and gives some trend data. The plan has an excellent characterization of the populations of aquatic focal species, but those of wildlife species are far more general, and plant populations are not</p>	<p>Yes</p>	<p>1</p>

discussed. Much of the aquatic discussion is based on EDT.		
I.B.4. Does the assessment describe the population's life history, including identifying distinct life stages?		
Reviewers: The Assessment describes life histories for each species, with the possible exception of bull trout life history complexity (i.e. fluvial, adfluvial, resident). The available life history information is adequately described for the aquatic focal species. Life history information for the wildlife species is described much more generally. There is an extensive wildlife appendix and the important elements from the appendix should be put in the Assessment. Life history information is especially important to consider for some of the bird focal species.	Yes	2
I.B.5. Does the assessment 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?		
Reviewers: The plan describes genetic diversity to the extent that information is available for each species. The available genetic information for salmonids is analyzed to determine the effects of declines in diversity. Genetic information is not used in considerations of terrestrial wildlife.	Yes	1
I.B.6. Does the assessment describe historic and current harvest, including both in-subbasin harvest and downstream or ocean harvest affecting the focal species?		
Reviewers: The Assessment adequately describes in-subbasin harvest and out-of-basin conditions affecting populations. Harvest data are in the document; however, they are scattered throughout many sections. Condensing it and putting it in one section would be useful. All told, the harvest information is good.	Yes	0
<b>Summary comments and evaluation on the Species Characterization and Status Subsection:</b> Does the assessment adequately describe the current status of fish and wildlife focal species?		
Reviewers: The Species Characterization and Status Subsection adequately assess aquatic species, but the wildlife species are assessed poorly. Also, the particular set of focal species may pose some problems for effective monitoring and evaluation, and for supporting the goals of ecosystem-level protection and restoration, because the focal species collectively do not cover the whole scope of the ecosystem, and some of them are extirpated.	Yes	2

<b>I.C. Environmental Conditions</b>			
<i>General question to be addressed: Does the assessment adequately describe the effect of the environment on fish and wildlife populations?</i>			
<b>I.C.1. Environmental Conditions within the Subbasin</b>		<i>(Y)es, (P)artial, (N)o</i>	<i>Need for additional treatment (0-4)</i>
I.C.1.1	Does the assessment describe the current condition of the environment in this subbasin, and characterize the condition of the environment under the following reference conditions: a) historic, <sup>3</sup> b) potential, <sup>4</sup> c) future/no new action, <sup>5</sup> 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?		
<p>Reviewers: The plan provides a general description of the subbasin's environment. Its discussion of the environmental conditions for each of the eight assessment units provides an examination of historic and current conditions, but the plan has little comment on potential or future conditions.</p> <p>The plan uses EDT to assess anadromous species and QHA to assess resident salmonid species. It is very difficult, however, to find specific results from these analyses. The plan provides no consideration of how future/no new action scenarios may result in the continued denigration of the system. Exploring this issue would enhance the text.</p> <p>The detailed results of EDT and QHA analyses are not shown, so reviewers could not determine how conclusions are derived. Demonstrating how the planners interpreted the EDT and QHA results would be useful.</p> <p>The paragraphs on harvest are integrated into the focal species discussion.</p>		Partial	2
I.C.1.2	Does the assessment classify 6 <sup>th</sup> field HUCs (or other appropriate assessment unit) within the subbasin according to the degree to which each area has been modified and the potential for restoration?		
<p>Reviewers: The Assessment develops a series of restoration actions for the subbasins embedded in the Deschutes subbasin plan, but the source of the recommendations, priorities, and actions are not clear. The potential for restoration is identified by HUCs, but how these HUCs are determined or prioritized in terms of restoration is unclear.</p> <p>This part of the Assessment is not applied to terrestrial species, at least not in the body of the report.</p>		Yes	2

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

<sup>4</sup> 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.

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

<b>I.C.2. Out-of-Subbasin Effects and Assumptions</b>			
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.		
<p>Reviewers: The Assessment includes some discussion of out-of-subbasin factors related to the mainstem Columbia and ocean conditions. There is a good brief summary of the effects of the PDO and ENSO. The specific application of these factors to the Deschutes subbasin, however, is weak. Outside factors are described in general terms rather than for individual species, perhaps implying that many of the factors apply across the board. Defining out-of-subbasin factors by species would augment the plan.</p> <p>If ocean factors are the major limiting factor for salmonid species in the subbasin, then it is possible that improvements within the subbasin, and the whole Columbia River basin, may not enhance salmonid runs to a sustainable level. Therefore it is incumbent upon this subbasin plan to include as detailed an analysis of ocean conditions as possible.</p> <p>This plan's attention to ENSO is good; most subbasin plans did not include it.</p>		Yes	1
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?		
<p>Reviewers: The plan examines a series of external effects in the Assessment and explicitly discusses them in several sections. The planners state, however, that they are not able to estimate the roles of internal versus external influences. Some creative selection of focal species, plus some coordination across subbasins, might help address the problem of understanding local versus broader constraints.</p> <p>The planners appear to feel that they cannot do anything about external effects. They could, however, begin monitoring a species that responds only or primarily to internal effects; the comparative data derived from this monitoring would begin to clarify which ecological factors are in-basin factors that can be improved and which are out-of-basin factors that probably cannot be improved. Ultimately, the problems the planners are having with this issue are connected to their choice of focal species. Using, or adding, focal species that act as indicators for all aspects of the ecosystem will facilitate better monitoring and planning.</p>		Partial	2
<b>I.C.3. Environment / Population Relationships</b>			
For each focal species, does the assessment 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 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.			

<p>Reviewers: The Assessment identifies key environmental factors related to the survival of species in different life history stages. This information is highly detailed for spring chinook and partly detailed for fall chinook, but it is more general for other fishes and terrestrial wildlife. The plan assumes that the EDT model identifies optimum conditions, so it compares the condition of identified reaches to the EDT optimum. The ability of the basin to provide such conditions is discussed.</p> <p>The plan casually explores key environmental factors related to the survival of species in different life history for wildlife species, in a table that states status as either increasing or decreasing. Viability should be more thoroughly considered, especially as the subbasin has chosen mostly threatened, and even extirpated, species as focal species. This choice has implications that the planners may not have fully considered in developing their Assessment and Management Plan.</p> <p>Like many subbasin plans, the Deschutes did not examine long-term viability except for spring chinook. This is a problematic omission for wildlife in the Deschutes because the planners have made reintroducing wildlife species an explicit management objective; thus, assessing the long-term viability of those species is essential.</p>	Partial	2
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	<p><b>Summary comments and evaluation on the Environmental Conditions Section:</b> Does the assessment adequately describe the effect of the environment on fish and wildlife populations?</p>
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<p>Reviewers: The Environmental Conditions Section describes the effect of the environment on fish and wildlife populations in general terms. They rely on the analytical tools to provide these general terms, but a species-by-species description is generally absent. Once again, the description is narrow due to the choice of focal species for both fish and wildlife that do not represent the whole ecosystem.</p> <p>It appears that the planners have set up this subbasin plan as a threatened and endangered species recovery program. This leads to a problem with the plan's consistency with the goal of overall habitat recovery, because actions that are aimed at the focal species may not be of maximum value to the whole ecosystem. If this is to be primarily a listed species recovery program, then assessing the long-term viability of those species is important. Adding this assessment would augment the plan.</p>	Yes	2
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<p><b>I.D. Ecological Relationships</b></p> <p><i>Question to be addressed: Does the assessment describe the key inter-species relationships and the key functional relationships?</i></p>	<p>(Y)es, (P)artial, (N)o</p>	<p><i>Need for additional treatment (0-4)</i></p>
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<p><b>I.D.1. Inter-species Relationships</b></p> <p>Does the assessment 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</p>
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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?		
<p>Reviewers: The Assessment does not strongly consider inter-species interactions, with the exception of their impacts on bull trout. Few interactions are described for wildlife focal species.</p> <p>The Deschutes basin, especially the upper Deschutes, is replete with exotic species. In some habitats (e.g., large high lakes) exotic species outnumber natives. The plan's scant examination of exotic species' interactions with native species is a serious oversight. A more extensive discussion of exotic species, including their interaction with and effects on native species, should be included in the plan.</p>	Partial	3
<b>I.D.2. Processes and Functions</b>		
Does the assessment identify key ecological functions for species within this subbasin and assess the current status of ecological processes and functions in the subbasin?		
<p>Reviewers: The Assessment provides a brief and simple description of key ecological functions. The plan offers some summary of IBIS for focal species, but little discussion of this information. Adding more consideration of disturbance regimes and how they shape habitat and contribute to natural variation would strengthen the plan.</p> <p>Overall, the plan fails to adequately examine processes and functions. One of the issues that the planners omitted, but should consider examining, is the effect that animal carcasses have on an ecosystem. The planners should talk about disturbance regimes and primary productivity and food chain productivity, the Deschutes is renowned for its productivity, so the planners should explore why this subbasin is so productive, from the algae on up.</p>	Partial	3

<b>I.E. Interpretation and Synthesis / Limiting Factors and Conditions</b>		
<b>I.E.1. Limiting Factors and Conditions</b>		
Does the assessment describe:		
<p>1) <b>Historic factors or conditions</b> that led to the decline of each focal species and of ecological functions and processes?</p> <p>2) <b>Current key factors or conditions</b> within and without the subbasin that inhibit populations and ecological processes and functions relative to their potential.</p>		
<p>Reviewers: The Assessment discusses key limiting factors and provides extensive lists of them for specific subbasins. EDT is utilized to determine key limiting factors for anadromous fish. QHA is <i>not</i> used to determine key limiting factors for resident fish. Employing QHA to do this would augment the plan. There is some quantification from the EDT model in the plan, but cumulative effects are not considered. The scale at which the EDT run is conducted is not clear.</p> <p>The only historic tool the planners utilize is IBIS, but the information</p>	Yes	2

<p>from IBIS does not bear on their examination. IBIS is terrestrial oriented and did not inform the examination of aquatic species.</p>		
<p><b>I.E.2. Key Findings</b></p> <p>Is the knowledge gained through the assessment 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?</p>		
<p>Reviewers: The Assessment describes key findings and provides extensive lists of them for specific subbasins, but the source of these findings is not clear. Further, the historical key factors are not identified. The plan’s synthesis of the EDT analysis with the key factors and actions is difficult to understand. The EDT results are not critically evaluated.</p> <p>The plan’s consideration of key findings centers strongly on issues of primary importance for focal stream-dwelling fish and for flowing water. Wildlife and terrestrial habitat almost disappear from consideration at this point of the plan. There is also little attention paid to the explicit resolution of conflicts and compatibilities between species or ecological processes; meaning that there is insufficient attention paid to the resolution of conflicts between the management tactics and the outcomes that they might subsequently suggest and be chosen to facilitate. It does not appear that key factors are thoroughly summarized or interpreted in a manner that is consistent with the Council’s Fish and Wildlife Program, which gives attention to whole communities and ecosystems, as well as to the roles of species within them. The availability and uses of water seem to be overwhelmingly of concern to the Deschutes Subbasin Plan, to the detriment of its attention to species, communities, and other aspects of ecosystems. This could be correctable, as much of the Assessment and Management Plan state a watershed-level approach, but the analysis and action sections will need to be broadened accordingly so that a more full range of species and communities are given attention.</p>	<p>Partial</p>	<p>2</p>
<p><b>I.E.3. Subbasin-wide Key Assumptions/Uncertainties (“Working Hypothesis”)</b></p> <p>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?</p>		
<p>Reviewer: The key factors and assumptions for the subbasin are listed, and conditions are identified briefly. The list is complex and detailed. It is difficult to determine the sources from which the list is derived.</p> <p>Many of the assumptions in this subbasin plan are based on achieving full passage at Pelton and Round Butte Dams. At this point establishing passage is a major uncertainty. The planners should have considered alternative passage scenarios ranging from limited passage success to failure to successfully establish passage. Similar uncertainties are sprinkled throughout the document; culling them out and placing them in one section would make the plan more readable and its key uncertainties</p>	<p>Partial</p>	<p>2</p>

more clear.			
	<p><b>Overall impression and evaluation of the Assessment:</b>  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>		
<p>Reviewers: The Assessment provides a general description of the subbasin and a clear picture of the conditions and challenges planners and managers face there.</p> <p>The Assessment’s sources and specific details are difficult to find or follow. The plan relies on appendices but connections between the text and appendices are largely left to the reader to find. Clearly identifying these connections, or placing vital information from the appendices into the text, would increase the readability of the plan. Also, relatively little use is made of recent peer-reviewed literature.</p> <p>A through examination of the Round Butte/Pelton Dam passage project should be included in the Assessment.</p> <p>The information that the Assessment provides on wildlife and their habitat is not adequate for creating a plan. A few Assessment Units such as the Lower Crooked River and the Upper Crooked River, adequately addressed wildlife and habitat associations. The rest of the plan should emulate them to augment its utility.</p> <p>Despite presenting a great deal of useful information, the Assessment ends with a very narrow focus that limits its value. It is particularly weak on biodiversity or biological community aspects. Also, something about the draft Assessment and Plan leads to the impression that contentious water (and maybe upland and wildlife) issues are of concern in the subbasin, but these concerns are not clearly stated. If some disagreements about goals are an issue, then these could be directly articulated in the Assessment and solutions should be sought as part of the Deschutes Subbasin Plan. One way or another, the focus of the plan needs to widen beyond stream-dwelling salmonids to better address the full suite of conditions and natural resource issues in the subbasin.</p>	Partial	3	

**II. The Inventory**  
*(This checklist section was developed from pages 11-12 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 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

<i>and activities extend beyond the subbasin to a larger scale (provincial and basin-wide).</i>			
<b>II.A. Existing Protection</b>		(Y)es, (P)artial, (N)o	<i>Need for additional treatment (0-4)</i>
II.A.1	Does the inventory identify areas with protections through stream buffers, municipal or county ordinances, conservation designations, or water resources protection?		
Reviewers: The Inventory provides a table of information (Table 1.1) that shows the specific kinds of protections that are available in areas along with who is providing it. The data sources, however, are not well documented. The existing information on programs of state and federal agencies are not presented in detail. Riparian programs are described in general terms.  Inventory information is collected and that information identifies protected areas, but the presentation is too general.		Yes	1
II.A.2	Does the inventory assess the adequacy of protections for fish, wildlife, and ecosystem resources?		
Reviewers: The Inventory does not provide a critical assessment of the adequacy of current protections. It appears to be very hopeful about the effectiveness of current practices and on-going improvements, but the source or scientific basis for that optimism is not identified. Completing an assessment of the adequacy of protections for fish, wildlife, and ecosystem resources would augment the plan.		No	3
<b>II.B. Existing Plans</b>			
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 Inventory identifies existing programs in a table (1.2) that offers specific information on the kinds of plans that are available in areas along with what entity is providing it. Synthesis of the many programs and projects is not provided, and existing programs are not reviewed.		Yes	2
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 plan states it is waiting for the results of other planning (e.g. TMDL) before assessing its consistency, but claims that it will incorporate relevant issues. Existing plan's consistency with the subbasin Assessments and their adequacy is briefly discussed for major programs; this discussion could be more explicit. There are tables and some text, but the analysis is quite limited and seems to consider only focal fishes; the planners leave out habitat and wildlife plans. While riparian plans are mentioned, they are not explicitly presented. Although the planners are waiting on TMDL, they still could assess the subbasin plan's consistency with other plans that are currently in place.		No	3

<b>II.C. Management Programs / Restoration and Coordination Projects</b>		
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? <sup>6</sup>	
Reviewers: The Inventory adequately identifies ongoing public and private management programs or initiatives that have a significant effect on fish, wildlife, water resources, riparian areas, and upland areas. The Inventory describes ten high profile or high priority projects in considerable detail aside from those listed in the Table I.1. While the planners indicate that these are scattered across the subbasin, they receive considerable attention, effort, and expenditure. The results of the projects have demonstrated some improvement in riparian areas and channel condition. The plan asserts that bull trout have benefited from rehabilitation projects as evidenced by an increase in their abundance, although they provide no empirical data to back this up. The plan's tables are thorough and the paragraphs describing major programs are also meticulous and informative with quantitative information.		Yes 0
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 Inventory adequately describes the management programs. This information can be found in Table 1.1.		Yes 0
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?	
Reviewers: The Inventory adequately, if briefly, lists the key findings of the management programs and then lists management actions.		Yes 0
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: A summary of the accomplishments and failures of management activities is rarely possible, given the limited data/information, but the Inventory does a reasonable job of analyzing what has been done. The successes and failures of the activities are not discussed, although there is some discussion of the benefits of "improved" conditions. This analysis has been missing from most subbasin plan's Inventories, so the Deschutes Subbasin Plan deserves kudos for including it.		Partial 2

<sup>6</sup> 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.5	Does the inventory 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?		<p>Reviewers: The plan presents 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 for the ten high-profile programs, but other programs are not commented on. The plan uses models to show what remains to be done in areas where projects presently exist.</p> <p>Wildlife and terrestrial resources are given slight attention in the gap analysis.</p> <p>All told, the gap analysis is adequate for aquatic species, but it is almost absent for wildlife species.</p>	Partial	2
	<p><b>Overall impression and evaluation of the Inventory:</b> 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 planners conducted a comprehensive public outreach and survey campaign to secure information about programs and plans. They provide sufficient lead-in information to permit useful integration and prioritization for future fish and wildlife projects.</p> <p>This plan seems to have been very responsive to the Council's guidelines at least down through the development of quantitative objectives. The underlying assumption here is that improvements are needed across the basin and if completed fish and wildlife goals will be met.</p> <p>The Assessment describes existing programs and projects, but the results, applications, and links to assessments are not thoroughly explored. Adding this linkage would enhance the plan. This is more of a listing.</p> <p>The Inventory is adequate for fish and streams, but it largely ignored wildlife species and habitat. A more complete accounting of terrestrial species and habitat is necessary to improve the utility and efficacy of the plan.</p>	Partial	2		

### 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).

<b>III.A. The Vision for the Subbasin</b> Does the Vision Section of the Management Plan 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: A conceptual framework outlined by Lichatowich (1998) generally describes the desired future condition of the subbasin. The historical and present ecological and cultural values of the subbasin are included. The vision statement is very broad and so does not clearly articulate what is desired for this basin. It emphasizes watersheds, but it becomes apparent that the focus in the plan is largely only on the fish in the moving waters at the bottoms of the watersheds. Like most other visions, this one is rather broad, but it is adequate.	Yes	0
<b>III.B. Biological Objectives</b> Does the Biological Objectives Section of the Management Plan describe physical and biological changes within the subbasin needed to achieve the vision?		
Reviewers: The Management Plan’s biological objectives are most explicit for the selected subbasins within the Deschutes. Quantitative targets are provided for some measures (acres, % change), though the derivations are difficult to determine. Although some of the aquatic species and habitat objectives have specific abundance goals, others are vague and general. The plan’s objectives offer little specific consideration of uplands and wildlife. A thoughtful and thorough consideration of biological objectives that pertain to wildlife species and habitat would strengthen the plan; wildlife is currently treated as an after thought.	Partial	2
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. <sup>7</sup>		
Reviewers: To be consistent with the basin-level visions, objectives, and strategies, the Plan’s biological objectives will have to be broadened to better address biological diversity. The objectives are quite general in embracing watersheds, but there is little specific information on terrestrial habitat or wildlife. The biological objectives are not specific or measurable and are narrowly focused. They do not embrace ecosystem processes. Wildlife is not given adequate attention. The planners should incorporate wildlife in a meaningful way into the plan.  There are no quantitative endpoints in the biological objectives, except some escapement goals for anadromous fish and some general objectives regarding habitat changes (% decline in fines, % change in width-depth	Partial	3

<sup>7</sup> 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.

ratios, etc.).		
The subbasin's vision is to have a healthy ecosystem as indicated by healthy focal species. Healthy focal species exhibit characteristics of a persistent population, but the elements of persistence are not the primary objectives of the plan. Rather, the objectives are presumed habitat fixes that may or may not contribute to the needs of a viable population.		
In general, the biological objectives are too narrow, and do not offer enough quantitative endpoints.		
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 biological objectives appear to be the result of the subbasin Assessment, but, to a large degree, they also reflect the objectives of on-going programs within the basin. The EDT results are not provided in detail, so the objectives are difficult to understand. Adding details to the EDT results would greatly improve the clarity of the logic of the plan. The generality of the link between the biological objectives and the Assessment in the current version suggests that the Deschutes subbasin will continue to operate as it always has, without justifying the efficacy of this approach.	Yes	2
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: Many of the biological objectives provide quantitative targets, but the rationale is not explicit or clearly linked to a specific analysis. Some would be difficult to quantify even when specific numerical objectives are given.	Yes	1
III.B.4. Are biological objectives identified for both the short and long-term?		
Reviewers: The plan adequately describes short-term (25 years) biological objectives, but they do not present long-term biological objectives, although they do cite the long-term needs to restore many lost elements and ecological functions. The plan provides no sense of what should be done immediately and why. The plan presents very few wildlife or terrestrial habitat objectives, and these objectives tend to be more vague than the aquatic objectives.	Partial	2
III.B.5. Are the biological objectives complementary to programs of tribal, state and federal land or water quality management agencies in the subbasin?		
Reviewers: The biological objectives appear to be complementary to programs of tribal, state and federal land or water quality management agencies in the subbasin, but this presentation is not well developed. Making this more explicit would enrich the plan.	Yes	1
III.B.6. <i>Clean Water Act</i> : Does the management plan 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 assess and describe the consistency-coordination-findings of the Water Quality Plan with the subbasin plan? <sup>8</sup>		
Reviewers: The Management Plan discusses links to the TMDL process but actually does not link the plan to the TMDL processes because TMDL development will not be complete until 2005-2006. The plan seems to be reluctant to link closely to the TMDL process, which may be an underlying weakness because of the lack of commitment or confidence in the TMDL process. This is outlined in Section 5.	Yes	1
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 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? <sup>9</sup>		
Reviewers: The Management Plan generally describes the links between the subbasin plan and ESA-based objectives for aquatic species, but the linkage for wildlife objectives is not as explicit. The specific needs for the persistence of each aquatic population are not identified. Section 5 outlines this.	Yes	1
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: No specific disagreements between co-managers are noted; if none existed, then the planners should insert a statement to that effect.	No	3

### III. C. Strategies<sup>10</sup>

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)<sup>11</sup>

<sup>8</sup> *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).

<sup>9</sup> 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](http://www.nwcouncil.org/library/2002/nmfstargets2002_0404.pdf).

<sup>10</sup> *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.

<sup>11</sup> 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 the problems identified by the subbasin assessment; i.e., does the Strategies Section take into account not only the

<p>Reviewers: The strategies are explicitly linked to the subbasin’s biological objectives in some sections and then listed by subbasin in the Management Plan. Unfortunately, the linkages are not explained well. The reader is forced to put together the pieces. Some of these pieces, such as the EDT results, are not provided.</p> <p>Many of this Plan’s strategies are really goals. The planners produced a summary of proposed strategies, but they are general in nature and described as tools to be used across the basin and not as strategies - that is precise actions - aimed at solving specific problems.</p> <p>The strategies the plan describes for terrestrial species and habitat are incidental.</p>	<p>Partial</p>	<p>3</p>
<p><b>III.C.2. Consistency with the Fish and Wildlife Program.</b> Are the Strategies proposed in the subbasin management plan consistent with those adopted in the program? (Council Question 4)</p>		
<p>Reviewers: The strategies proposed in the subbasin Management Plan are generally consistent with those adopted in the Council’s Fish and Wildlife Program. The subbasin plan’s priorities and alternatives, unintended consequences, and relative values are not yet well developed.</p>	<p>Yes</p>	<p>1</p>
<p><b>III.C.3. Consideration of Alternative Management Responses.</b> 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)<sup>12</sup></p>		
<p>Reviewers: No alternative management strategies are found. If no alternatives are considered than the planners should insert a statement to that effect.</p>	<p>No</p>	<p>3</p>
<p><b>III.C.4. Prioritization.</b> Does the Strategies Section describe a proposed sequence and prioritization of strategies?</p>		
<p>Reviewers: The plan prioritizes reaches for protection and restoration. There is not enough prioritization of the extensive proposed list of fish strategies; specific sites within reaches are not prioritized. Some criteria for judging and comparing proposals that suggest implementation specifics need to be presented in the plan. The top ten priorities remain very broad and general, and there are not priorities given among or within them. Moreover, how these ten areas are prioritized is not made entirely clear. Explaining why these reaches are prioritized would strengthen the plan.</p> <p>The plan states a philosophical preference for building from strength, preserving core areas and populations, and clustering projects out from</p>	<p>Yes</p>	<p>2</p>

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.

<sup>12</sup> 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.

<p>these strongholds, but these principles (and perhaps others) should be more formally developed to define criteria that can be used to prioritize projects in the future or to prioritize further the strategies that are in this plan.</p> <p>Overall, more detailed and clear prioritization is needed. The planners deserve credit for prioritizing reaches, but the plan needs to then prioritize projects within the reaches because the scale they are working at is so large it is hard to know what will be done in each reach. These crucial decisions will have to be made. The planners did a good job of building from core areas. This prioritization effort is better than most subbasin plan's, but the planners will have to refine their prioritization to a finer level given the limited funds they will have to work with.</p>		
<p><b>III.C.5. Additional Assessment Needs.</b> Does the Strategies Section describe, if necessary, additional steps required to compile more complete or detailed assessment?</p>		
<p>Reviewers: The plan currently appears to assume that its visions can be attained and thus presents few additional assessment needs. The plan should demonstrate via analysis/modeling, etc. what the potential is for desirable species in the basin compared to desired goals and then decide where additional assessment is necessary.</p> <p>The plan describes additional inventory or research needs, rather than assessment needs, and the reasoning behind these research needs is not provided.</p> <p>Since there is not, at this stage, any significant development of the terrestrial and wildlife portions of the subbasin plan, it should at least contain a goal to build these critical aspects of a complete subbasin plan that is consistent with the ecosystem- level principles given in the Council's Program. As of now, the plan's wildlife component is inadequate.</p> <p>The planners should look to the Programmatic Section of ISRP/AB report for further guidance on crafting the terrestrial portion of a subbasin plan.</p>	<p>Partial</p>	<p>3</p>
<p><b>III.C.6. Clean Water Act:</b> Does the management plan 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?</p>		
<p>Reviewers: The plan adequately, if briefly, describes how its strategies are reflective of and integrated with the water quality management plan and Total Maximum Daily Load schedule. As noted before, the Management Plan distances itself from the TMDL process or delays integration until completion of the TMDL process.</p> <p>Section 5 contains this information.</p>	<p>Yes</p>	<p>0</p>
<p><b>III.C.7. Endangered Species Act:</b> Recognizing that ESA-based efforts are in various states of completion across the Columbia basin, does the management plan 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?</p>		

Reviewers: The plan adequately, if briefly, describes how the strategies of the subbasin management plan are reflective of and integrated with the ESA-based goals for listed species within the subbasin.  Section 5 contains this information.	Yes	0
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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	<b>Research:</b> 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, (N)o	<i>Need for additional treatment (0-4)</i>
Reviewers:	The plan’s RME process is preliminary and not adequately described. This plan’s RME efforts are linked to some objectives and strategies and some research questions are identified, but the source of these links and questions are not clearly established. This section is very limited and probably needs major expansion and then prioritization to serve the subbasin needs well. The research agenda is tabularized, but it is not developed in any detail. The planners identify three thematic areas of research needs: 1) life histories; 2) straying; and, 3) habitat treatments. Overall, this is more of a series of bullet points than a research agenda.	Partial	3
III.D.2	<b>Monitoring Objectives:</b> 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 plan only superficially describes what indicator variables will be monitored; the emphasis on restoration and the narrow choice of focal species make this especially essential, as there is no reason to expect that managing for a small number of mostly rare or extirpated species will result in diverse and productive ecosystems. The planner’s RME section identifies information needs in very general	Partial	3

<p>terms; however, the process or analyses used to identify information needs is unclear.</p> <p>The plan must have many indicator variables to monitor if it is to manage for species rather than for an ecosystem. To improve, it should have quality monitoring of focal species and high quality diversity monitoring, because that is not present in the focal species selection. Such an extensive monitoring regime is not set up in the plan. Monitoring for bull trout and spring Chinook, steelhead and redbands is adequate; fall chinook is more difficult.</p> <p>Overall, the RME plan is too general to meet ecosystem-monitoring needs.</p> <p>Given the Plan's focus on cold-water salmonids, changes in cold water and cool water fish assemblages' should be considered as part of the RME plan.</p>			
III.D.3	<p><b>Monitoring Indicators:</b> 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>	Partial	3
<p>Reviewers: The plan provides a few quantitative benchmarks for some strategies in the long lists described in the Management Plan. Research questions are found in subsequent lists. The derivation of these lists and the links between them are unclear. There is no integrated consideration of good indicators for overall effects -- the list is very particular.</p>			
III.D.4	<p><b>Data and Information Archive:</b> 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>	Partial	1
<p>Reviewers: The plan provides general discussion about an infrastructure to archive relevant data and meta data generated through monitoring efforts in the subbasin. The plan does not describe data management. It only states that it will use the protocols of the Northwest Environmental Database Network. It also mentions using StreamNet.</p> <p>The planners basically say that they cannot do this without help (and money), which is probably true, and is therefore adequate for this stage of planning; creating a coordinated and accessible data and information archive is difficult to do.</p>			
III.D.5	<p><b>Coordination and Implementation:</b> 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>	Partial	2
<p>Reviewers: The plan's data collection effort is to be coordinated with regional planning. The plan does not, however, provide an explicit process for the coordination of data collection and management.</p>			

III.D.6	<p><b>Summary Question. RME Logic Path (Evaluation and Adaptive Management):</b> 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>			Partial	3
	<p><b>Overall impression and evaluation of the Management Plan:</b> 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>			Partial	3
	<p>Reviewers: The plan is extensive and detailed, with many objectives and strategies for each of its many units. It is not clear how this plan can be implemented without supplying clear priorities or specific guidelines for prioritization. All of the proposed objectives and strategies certainly will not be possible. Priority areas (and these are not small or simple areas) are identified in the near-term. The planners need to show what strategy(ies) should be implemented first and explain why. The focus on extensive sets of actions in priority areas does not give enough guidance to choose which actions to do first. The Management Plan provides selected prioritized strategies for subbasins, but does not link this effort to an explicit monitoring and evaluation plan. The Guiding Principles cited in the plan are extremely fish-centric, and seemingly too narrow for a subbasin plan that embraces fish and wildlife and habitat, and in which these are viewed as interactive components of dynamic ecosystems.</p> <p>Many of the assumptions in this subbasin plan are based on achieving full passage at Pelton and Round Butte Dams. At this point establishing passage is a major uncertainty. The planners should have considered alternative passage scenarios ranging from limited passage success to failure to successfully establish passage scenarios</p> <p>The plan needs to follow through from its background and Assessment and expand its focus to explicitly include wildlife and terrestrial habitats, as well as fish.</p> <p>The plan's needs for focal species to persist should be estimated for the subbasin; the possibilities for meeting these needs should be described; an assessment of whether or not the needs can be met should be made. If they can be met, the planner's should demonstrate how. If they cannot</p>			Partial	3

be met, then the planner's should explain where the bottlenecks are and what has to happen if they are to be overcome. Obviously, data do not exist to be precise in setting these requirements, but modeling/expert systems etc. can be used to make the "best" estimate (hypothesis) and careful monitoring can help to provide the basis for identifying appropriate adjustments in the adaptive management approach. It is unfortunate that assessments of the benefits to fish and wildlife of the many projects in the basin have apparently not been completed. In the absence of such assessments, it is difficult to claim that more of the same is warranted.

This plan made some attempt to include quantitative objectives and to assess the feasibility of the proposed actions in ten key areas. More work is required in both areas. Feasibility assessments that depend on broad scale water management conservation measures or land-use practices need further refinement.

The planners should examine exotics much more thoroughly, especially their interactions with native species.

The planners overestimated their smolt yield. They had an erroneous focal salmon survival rate. Their targets are substantially over-estimated. They do not seem to have a good understanding of the issue.

Given the complexity of the basin, the narrow focal species have left out management of large parts of the ecosystem. Using additional focal species to serve as indicators for parts of the ecosystem that are not currently considered is necessary to make this an eco-system management plan rather than a salmon recovery plan.

Terrestrial habitat and species are given secondary consideration in this plan. The terrestrial species and habitat component of the plan is inadequate; it needs more thorough attention at every stage of this plan.

### **General Council Question. Consistency with the Fish and Wildlife Program and its Scientific Foundation**

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:

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.

*See 2000 Fish and Wildlife Program, pages 14-15 for full detail.*

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.

**Summary comments and evaluation of the subbasin plan’s consistency with the eight principles of the Fish and Wildlife Program’s Scientific Foundation:**

<p>Reviewers: The diverse planning group appears to have captured much of the spirit and intent of the Council’s Fish and Wildlife Program. The plan’s lack of analysis of the trajectories of ecosystem change, specific outcomes of data analyses, listed species, and coordinated monitoring and data management program, however, make it unlikely that it would implement the Council’s conservation and restoration efforts as effectively as possible.</p> <p>The current draft of this plan lacks attention to ecosystem diversity and dynamics. It also presents consideration of only local and immediate anticipated consequences of human management actions. Any downside to human intervention, or any limits to possibilities of this except for an out-of-subbasin effects disclaimer, is ignored. The plan also is extremely focal-salmonid-centric, probably to the detriment of everything else. Although the plan does acknowledge the Council’s Eight Principles, and probably is intended to implement them, it is too narrowly focused on a small number of focal fish to support the emphases on diversity, ecosystem linkages, dynamics, and interactions that are realized by the Council’s Principles. These are fixable problems, as many philosophical statements in the Assessment and Management Plan emphasize the Council’s Principles, but the objectives and strategies that have so far been developed are too narrow.</p> <p>The Plan presents an inadequate consideration of the dynamic nature of ecosystems and the role of disturbance in shaping aquatic habitats. What are the important ecological functions and processes that must be restored? It is unclear how the Plan will address natural variation both in and out-of-basin. How is biodiversity protected and restored? The plan must develop good answers to these questions in order to be consistent with the Scientific Principles of the Fish and Wildlife Plan.</p>	<p>Partial</p>	<p>3</p>
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