Crab Creek

Review Summary

The Crab Creek Subbasin Plan needs additional work in each of the three components of a subbasin plan before it can meet the scientific elements for a subbasin plan called for in the Council's 2000 Fish and Wildlife Program and the Subbasin Planning Technical Guide.

Assessment
A unique feature of this subbasin is the fact that due to the Bureau of Reclamation's Columbia Basin Irrigation Project, more water is pumped into the Subbasin from the Columbia River than enters into it from all natural sources within the Subbasin. Return flows after irrigation use, excess water, and leakage from the project all contribute large amounts of water to the system. Although there is a general discussion of the Columbia River Basin Irrigation Project, the plan would be improved by a more detailed discussion of the hydrological environment, because it may change with different economic pressures and impact the needs of species. Specifically, discussion of human actions in the overview and regional context needs significant improvement. Past trends are presented, but there is no prediction into the future.

The Assessment provides an interesting perspective on the lack of restoration value for aquatic habitat since the current flow conditions are higher than historical conditions due to the influence of the Columbia Basin Irrigation Project. The Assessment indicates that the current conditions and habitats offer opportunities to do offsite mitigation. Specifically, the authors state that the irrigation project is a Columbia River diversion, so plan implementers could use that water to enhance fisheries to take pressure off other species. The ISRP, however, has often questioned whether providing fishing opportunity in one area actually takes pressure off another area.

The Assessment identifies nine focal species: summer/fall Chinook salmon, steelhead/rainbow trout, Kokanee salmon, smallmouth bass, largemouth bass, bluegill, black crappie, walleye, and yellow perch. The latter six of these species are non-native. Although their ESA or state listing status together with their value as a game species are the primary criteria used to select aquatic focal species, the selection could be better in a number of ways. First, the plan contains only very brief summaries for each species, their important life stages, and their relationship to other species, with only minimal information provided to explain the rationale for their selection. Second, the Assessment does not adequately describe species that have importance to Native American tribes. Third, the large number of non-native focal species presents an inherent conflict with goals to protect and restore native species. As a result, the plan needs to better describe how management of these non-native focal species may conflict with management of native species. Explanations could include discussion of closed basin management as compared to open system management; e.g., in warm water closed systems, substitution may be justified in terms of the Fish and Wildlife Program. Fourth, are there native resident salmonids in the headwater? If so, these may be likely choices for focal species. A survey of native fishes may be warranted.

The plan includes some information on wildlife in the Subbasin Summary and describes one large ongoing project in the subbasin, but on the whole, the treatment of wildlife is lacking. A formal wildlife assessment was not done for this plan. Although the planners made this fact clear at the plan presentation to the ISRP/AB, the plan itself does not make this clear, which was confusing for the reviewers. Most of the checklist below only applies to aquatic information/issues; i.e., inclusion of a real evaluation of the plan's treatment of wildlife would result in "No" or "Partial" 3s and 4s scores throughout the checklist.

In sum, the Assessment includes a lot of useful information and a reasonable amount of synthesis, but the coverage is mixed. There are some important gaps or omissions, particularly with respect to wildlife and to forming "a holistic view of the subbasin's biological and environmental resources." Historical and future conditions are not assessed rigorously. Reviewers also questioned the choice of a number of non-native species to serve as the majority of focal species, but they understand the situation in Crab Creek Subbasin is unique.

Inventory

Although there is a fairly extensive coverage of activities, in total, the Inventory needs additional work before it can best inform development of a Management Plan. Where it lacked effort was in an overall synthesis and general conclusion as to the state of the subbasin.

Management Plan

Overall, the inadequate organization and presentation of the Management Plan make it an unusable document for implementation of proposed actions. Although the strategies are linked generally, explicit linkage of strategies, objectives, and vision is not included. Furthermore, even though the plan appears consistent with the eight principles, its lack of analysis of trajectories of ecosystem change, wildlife species, critical evaluation of QHA results, and coordinated monitoring and data management program make it unlikely that it would be used to help implement the mitigation, conservation, and restoration efforts as effectively as possible.

To be an effective planning and guidance document, this plan needs to be rewritten and carefully edited for readability. For example, in the description of the Crab Creek watershed, it would have been better to take material from the subbasin summary and fit it into the format of the subbasin plan assessment rather than just cut and paste it in; specifically, text needs editing to reconcile the places where it says things like "explained earlier in the document" which doesn't refer to this document.

Although the presentation to the ISRP/AB described outreach and open meetings designed to involve the public, stakeholder participation is not evident in the plan. The solitary item of public comment provided is a letter from the group of irrigation districts indicating they were not part of the process. The planners presented that they developed the plan in four months from February to May 2004, which is a very ambitious timeframe to complete a plan that will meet the scientific elements described in the Council's program and technical guide.

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.

I. A.1. General Description		*(Y)es, (P)artial, (N)o*	*Need for additional treatment (0-4)*
I.A.1.1	Does the assessment provide a general orientation to the subbasin (location, size, distinguishing natural and cultural features, land use, land ownership) and an overview of jurisdictional authorities (state, county, federal lands, tribal lands and fishing rights)?		
Reviewers: To answer the questions in this section, reviewers include the information presented in the Executive Summary along with that included in the actual Assessment portion of the overall plan. The Assessment provides an adequate orientation of the subbasin. Information pertinent to this section is included in some other sections; e.g. the land ownership map and text is in the wildlife focal species section. More maps would be useful. Jurisdictional explanations are lacking, particularly those pertaining to tribal interests, including fishing rights.		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 Assessment provides a general description of the physical environment. Although the description comes from the subbasin summary (as acknowledged in the text), the text needs editing to reconcile the places where it says things like "explained earlier in the document" where that statement does not refer to this document. Brief descriptions of climate and vegetation cover are provided. Although hydrology is generally covered, the description of changes in timing and magnitude of stream flow is far too brief and does not describe historical changes in discharge.		Yes	2
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 "land use and demographics" section describes a curious mix of natural physical features and anthropogenic alterations to the landscape. The anthropogenic disturbances are not described adequately in the subbasin description, nor put into a regional context. Disturbances are not necessarily organized by source, and a more comprehensive discussion of those disturbances would improve the plan.		Partial	2
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?		
Reviewers: The Assessment provides a list of species that are ESA-listed or have importance to Native American tribes. A list of wildlife species with their protection status noted is also presented. Although short descriptions of those animals categorized as shrub-steppe obligates and others, are included, more information regarding parts c. and d. would be desirable. Aquatic "species of interest" are also listed in a table with protection status noted. Short descriptions of some of these species are provided, with a very brief "limiting factors" paragraph at the end.		Partial	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?		
Reviewers: Although the Assessment does not adequately describe plant species that have been identified as threatened or endangered by federal ESA or the state, it does include some descriptions of habitat associations.		No	3
I.A.2. Subbasin in the Regional Context		*(Y)es, (P)artial, (N)o*	*Need for additional treatment (0-4)*
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)?		
Reviewers: Although a map locates the subbasin within the Columbia River Basin, the plan would be improved by inclusion of a comparison with other subbasins in the province.		Partial	1

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.[1]) where this information was available during the planning process?		
Reviewers: Although ESA designations are included in species tables, explicit descriptions of the relationship for each species to the ESA (specifically important ESUs) and to the FWS's Bull Trout Units are lacking. Details and involvement of different parties are not well described. What is the status of the Columbia River spotted frog, and what are the implications for management?		Partial	2
I.A.2.3	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)?		
Reviewers: The Assessment does not adequately discuss effects of external factors. Although ocean conditions are acknowledged as a factor, evaluation of their effect is weak, yet perhaps not a major factor for this subbasin.		Partial	3
I.A.2.4	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)?		
Reviewers: Discussion of human actions in the overview and regional context needs significant improvement. Past trends are presented, but there is no prediction into the future. Although there is a general discussion of the Columbia River Basin Irrigation Project, the plan would be improved by a more detailed discussion of the hydrological environment, because it may change with different economic pressures and impact the needs of species.		Partial	2
	Summary comments and evaluation on the Subbasin Overview: Does the assessment provide the geographical, demographical, and environmental context for fish and wildlife resources in this subbasin?		
Reviewers: The Assessment provides a general context for fish and wildlife resources in the basin. Major elements of that context that need improvement are consideration of other native aquatic species, wildlife species, plants, historical trends, land use practices, future trends and outcomes, and ocean conditions.		Partial	2

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

I.B. Species Characterization and Status *General question: Does the assessment adequately describe the current status of fish and wildlife focal species?* 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,[2] and c) cultural significance.		

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

Reviewers: The Assessment identifies nine species: summer/fall Chinook, steelhead, Kokanee, smallmouth bass, largemouth bass, bluegill, black crappie, walleye, and yellow perch. The latter six are non-native species. The plan contains only very brief summaries for each species, their important life stages, and their relationship to other species, with only minimal information provided to explain the rationale for their selection. Historical and current wildlife habitat types are mapped, with tables summarizing their distribution by ownership and acreage. As the presenters stated, however, no wildlife focal species were selected; the plan should make clear why this occurred and describe a strategy to develop a wildlife plan. As a result, wildlife issues would receive a score of "No – 4" for all of these. The scores that follow are for the aquatic analysis. Although their ESA or state listing status, together with their value as game species are the primary criteria used to select aquatic focal species, the rationale for their selection could be provided better in several ways. First, the Assessment does not adequately describe species that have importance to Native American tribes. Second, the large number of non-native focal species presents an inherent conflict with goals to protect and restore native species. The plan needs to better describe how management of these non-native focal species may conflict with management of native species. Explanations could include a discussion of closed basin management as compared to open system management; e.g., in warm water closed systems, substitution may be justified in terms of the Fish and Wildlife Program. Third, are there native resident salmonids in the headwater? If so, these may be likely choices for focal species. A survey of native fishes may be warranted.	Yes	2
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?		
Reviewers: The Assessment provides an adequate, but limited, characterization of the populations of steelhead and Chinook. Although the characterizations of non-native species are more thorough, this kind of population/genetic-based information on this set of non-natives is mostly irrelevant for this planning process. (Reviewers were astounded that a state agency in Washington would decide to stock Florida bass).	Partial	2
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)?		
Reviewers: Only very brief and general descriptions of each aquatic focal species are provided. For the most part, abundance information (either current or historical) was lacking. No trend data were included.	No	3
I.B.4. Does the assessment describe the population's life history, including identifying distinct life stages?		

Reviewers: Although available life history information is briefly described for the various aquatic focal species there are a number of errors associated with the centrarchid species. Details regarding salmonids' distinct life stages and their importance are lacking.	Partial	3
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 available genetic information for salmonids is not adequately discussed.	No	3
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: Although historical and current harvest practices are described briefly for kokanee, carp, perch, bluegill, and crappie, no data are given. In addition, there was no discussion of out of basin harvest.	Partial	3
	Summary comments and evaluation on the Species Characterization and Status Subsection: Does the assessment adequately describe the current status of fish and wildlife focal species?	
Reviewers: Fish species are not adequately addressed and wildlife species are only discussed in broad generalizations.	Partial	3

I.C. Environmental Conditions *General question to be addressed: Does the assessment adequately describe the effect of the environment on fish and wildlife populations?*			
I.C.1. Environmental Conditions within the Subbasin		*(Y)es, (P)artial, (N)o*	*Need for additional treatment (0-4)*
I.C.1.1	Does the assessment describe the current condition of the environment in this subbasin, and characterize the condition of the environment under the following reference conditions: a) historic,[3] b) potential,[4] c) future/no new action,[5] and the potential condition of aquatic and terrestrial habitats within the subbasin? Does the assessment include a determination of the difference between current conditions and the various reference conditions?		
Reviewers: Although the plan uses one QHA for all species, EDT could potentially be used for some focal species. Reference conditions were spelled out for the six Assessment Units.		Partial	3
I.C.1.2	Does the assessment classify 6th field HUCs (or other appropriate assessment units) within the subbasin according to the degree to which each area has been modified and the potential for restoration?		

[3] The historic condition refers to the state of the environment at the time of European settlement, or 1850.
[4] The potential condition is defined as the optimal condition for the subbasin in the year 2050, but it acknowledges cultural modifications that are not reversible such as urbanization.
[5] The future/no new action condition is the state of the environment in 2050 assuming that current trends and current management continues.

Reviewers: The Assessment considers six assessment units in developing a series of restoration actions for subbasins of the lower mainstem based on the QHA analysis. This approach seems to work adequately.	Yes	1

I.C.2. Out-of-Subbasin Effects and Assumptions

I.C.2.1	Does the assessment identify factors outside of the subbasin that have a significant effect on each focal species, with particular attention to bottlenecks? These might include effects associated with upstream conditions, downstream conditions, and, in the case of migratory wildlife, conditions in adjacent subbasins. Outside effects are particularly relevant for anadromous fish and may include mainstem passage and habitat, estuary conditions, ocean conditions, and harvest.

Reviewers: The Assessment does not adequately discuss out-of-basin effects; they were assessed only at a superficial level.	No	2

I.C.2.2	For each focal species, does the assessment establish assumptions for each external effect that can be used to calculate the effects of external conditions on the productivity and sustainability of fish and wildlife within this subbasin?

Reviewers: Overall, the assessment does not discuss out-of-basin effects thoroughly.	No	2

I.C.3. Environment / Population Relationships

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.

Reviewers: There could be a number of additional details provided in this area for the various focal species. How closed is this system? The Assessment identifies several environmental factors related to the survival of different life history stages of steelhead and Chinook. The ability of the basin to provide such conditions, however, is not discussed well. Long-term viability is not discussed.	Partial	2

	Summary comments and evaluation on the Environmental Conditions Section: Does the assessment describe the effect of the environment on fish and wildlife populations?

Reviewers: The Assessment provides a general discussion of the effect of the environment on fish and wildlife. Although the way that the subbasin was broken into six assessment units was a positive, there could have been more information given concerning how the changing environments would impact the various life stages of the focal species.	Partial	2

I.D. Ecological Relationships *Question to be addressed: Does the assessment describe the key inter-species relationships and the key functional relationships?*	*(Y)es, (P)artial, (N)o*	*Need for additional treatment (0-4)*

I.D.1. Inter-species Relationships 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 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?		
Reviewers: Although no explicit interrelationships between anadromous fish and wildlife are described, interrelationships among various fish species are explored. Specifically, planners provide a qualitative assessment that addresses this question in the focal species section in terms of multiple species' use of the same habitat at different life stages and, in the absence of data, listed potential types of interaction based on expert knowledge.	Yes	2
I.D.2. Processes and Functions 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?		
Reviewers: There is not much explicit emphasis on ecological processes and functions. The Assessment provides only a brief description of key ecological functions, usually included as data gaps and research needs in the RME section.	Partial	3

I.E. Interpretation and Synthesis / Limiting Factors and Conditions		
I.E.1. Limiting Factors and Conditions Does the assessment describe: **1) Historic factors or conditions** that led to the decline of each focal species and of ecological functions and processes? **2) Current key factors or conditions** within and without the subbasin that inhibit populations and ecological processes and functions relative to their potential.		
Reviewers: For the most part, the Assessment adequately identifies limiting factors for aquatic species for five assessment units using QHA and by combining information from the Assessment Units section with information from the Focal Species section. Historical factors are discussed only briefly. A list of human actions affecting habitat is briefly described. A wildlife assessment specific to the Crab Creek Subbasin was not performed. Instead, information from a Columbia Cascade Ecoprovince Wildlife Assessment is used to compare historical and current habitat by various categories. Degree of protection status for each is summarized. Desired condition is described. Some information from the subbasin summary is inserted into the plan. A formal wildlife assessment specific to Crab Creek subbasin would improve this plan.	Yes	2

I.E.2. Key Findings 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?		
Reviewers: Limiting factors, restoration and protection values, and data gaps are identified for each of the focal aquatic species using QHA. Key findings of the same are then briefly listed for the subbasin as a whole. Restoration and protection reaches are listed in priority order. Synthesis and interpretation comes from the provincial assessment, without modification to the Crab Creek Subbasin. Historical key factors are not identified. Conflicts and capabilities are not explored thoroughly. In summary, categories 1-4 are treated reasonably well, but categories 5 and 6 are not well discussed. In addition, there is a Synthesis and Interpretation Section for terrestrial wildlife, but not one for fish or plants - a major shortcoming.	Partial	2
I.E.3. Subbasin-wide Key Assumptions/Uncertainties ("Working Hypothesis") Does the assessment describe the key assumptions (including uncertainties) that have been made in the "Key Findings" above, and document the data sources and/or analytical tools relied upon?		
Reviewers: Key factors and assumptions are listed with little explanation. It is difficult to determine the sources.	Partial	3
	Overall impression and evaluation of the Assessment: Does the assessment adequately synthesize the information regarding the health and functioning of this subbasin ecosystem? Does it adequately: a) bring together the single-species and community assessments to form a holistic view of the subbasin's biological and environmental resources, b) provide a foundation for the development of scientific hypotheses concerning ecological behavior and the ways that human intervention might prove beneficial? As needed elaborate on your evaluation of the various Sections enumerated above. If the plan provides additional analysis beyond what is laid out above in the checklist please comment here (e.g., socio-economic descriptions or analysis).	

Reviewers: Although there is a lot of useful information and a reasonable amount of synthesis, the coverage is mixed, and there are some important gaps or omissions, particularly with respect to wildlife and to forming "a holistic view of the subbasin's biological and environmental resources." Historical and future conditions are not assessed rigorously. Reviewers also questioned the choice of a number of non-native species to serve as the majority of focal species, but they understand the situation in Crab Creek Subbasin is unique. The Assessment provides an interesting perspective on the lack of restoration value for aquatic habitat since the current flow conditions are higher than historical conditions due to the influence of the Columbia Basin Irrigation Project. The Assessment indicates that the current conditions/habitats offer opportunities to do offsite mitigation. Specifically, the authors state that the irrigation project is a Columbia River diversion, so plan implementers could use that water to enhance fisheries where they can to take pressure off other species. The ISRP, however, has often questioned whether providing fishing opportunity in one area actually takes pressure off another area. Given the unique conditions in the subbasin, the plan should include a clearer description of the water rights situation and the associated protection for instream flow.	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 and activities extend beyond the subbasin to a larger scale (provincial and basin-wide).

II.A. Existing Protection		*(Y)es, (P)artial, (N)o*	*Need for additional treatment (0-4)*
II.A.1	Does the inventory identify areas with protections through stream buffers, municipal or county ordinances, conservation designations, or water resources protection?		
Reviewers: Although a list of federal, state, tribal and local government entities is provided, areas under protection are not identified.		Partial	2
II.A.2	Does the inventory assess the adequacy of protections for fish, wildlife, and ecosystem resources?		
Reviewers: Although the Assessment provides some evaluation of the adequacy of current protections, there was no general conclusion, only piecemeal comments by jurisdictional activity.		Partial	2
II.B. Existing Plans			
II.B.1	Does the inventory identify and review applicable local, state, tribal, and/or federal fish and/or wildlife management plans and water resource management plans that affect fish and wildlife?		

Reviewers: The Inventory provides a list and discussion of existing programs, identifying ESA and BiOp, but with little synthesis by area. Because information was organized by jurisdictional entity, it was difficult to answer this question.		Yes	1
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 adequacy of protection offered by existing plans and the consistency of those existing plans with the Assessment are not fully discussed for major programs.		No	2
II.C. Management Programs / Restoration and Coordination Projects Does the inventory identify management programs implemented through on-the-ground restoration and conservation projects that target fish and wildlife or otherwise provide substantial benefit to fish and wildlife? These include, at a minimum, those implemented within the past five years regardless of funding source.			
II.C.1	Does the inventory identify ongoing or planned public and private management programs or initiatives that have a significant effect on fish, wildlife, water resources, riparian areas, and/or upland areas?[6]		
Reviewers: Management programs of various entities are described in an extensive list by jurisdictional entity. The information appears to have been directly lifted out of some other source without modification to the subbasin. No interpretation of relevance is provided.		Yes	3
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: For the most part, this information (with the exception of identifying relationships) is provided for the projects funded by the BPA and other sources.		Partial	2
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 Assessment briefly discusses key findings and identifies management actions, but they are not discussed in a systematic way.		Partial	2
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: Successes and failures are not presented adequately.		No	3
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?		
Reviewers: The level of synthesis described in the Subbasin Planning Technical Guide was not present - but there was a listing of information gaps.		?	3

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

	Overall impression and evaluation of the Inventory: As needed elaborate on your evaluation of the various Sections enumerated above. If the plan provides additional information or analysis beyond what is laid out above in the checklist please comment here (e.g., socio-economic descriptions or analysis).	
Reviewers: Although there is a fairly extensive coverage of activities, in total, the Inventory is not there yet. Where it lacks effort is in an overall synthesis and general conclusion as to the state of the subbasin.	No	3

III. The Management Plan

(Derived from pages 12-16 of the Technical Guide.)
Reviewers should consider the soundness, completeness, analytical approach, and transparency (documentation of methods and decision-making process) of the following components of a subbasin management plan.

These checklist tables incorporate Council Question 4, Consistency with the Provincial- and Basin-level Program: Are the vision, objectives, and strategies proposed in the subbasin management plan consistent with those adopted in the program for the province and/or basin levels? This is a three-part question and reviewers must be familiar with the vision, objectives, and strategies described in the 2000 Fish and Wildlife Program (pp. 13-33) and, for mainstem subbasin plans, the Mainstem Amendments (pp.11-28).

III.A. The Vision for the Subbasin Does the Vision Section of the Management Plan 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*	*Need for additional treatment (0-4)*
A well-worded vision for the Crab Creek subbasin is provided. It describes goals for human communities, fish, wildlife, and ecosystems from several sources.	Yes	0
III.B. Biological Objectives Does the Biological Objectives Section of the Management Plan describe physical and biological changes within the subbasin needed to achieve the vision?		
Reviewers: For the most part, yes, although there are some areas that remain unclear, and wildlife issues are underrepresented, although objectives to map habitat, monitor changes in habitat, and develop a wetland management plan are included. The strategies sections, provided below each grouping of objectives, is quite brief and general, although the general tone sounds reasonable. The approach of treating each Assessment Unit independently with separate Hypothesis Statements, Objectives, and Strategies is a nice organizational touch.	Yes	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.[7]		

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

Reviewers: There are potential problems here, particularly the continued management of potentially destructive non-native fishes for recreational use.	Yes	2
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: Biological objectives are identified for five assessment units. The objectives relate to limiting factors identified in the subbasin summaries (done earlier) rather than to factors identified through the current assessment process.	Yes	0
III.B.3.Where possible, are the biological objectives empirically measurable and based on an explicit scientific rationale; i.e., quantitative with measurable outcomes?		
Reviewers: The biological objectives are too general to be measurable; most are directed at filling data gaps. The following represent specific examples: 1) Assessment Unit #1 – Hypothesis Statement #6 Objective #1 is fairly nebulous - how will it be measured? 2) AU #2 - HSt #6 Obj #1 = assumes hypothesis is correct, but even if it is, how will this be done or measured? 3) AU #5 - HSt #6 = too general, how/what is to be done/learned? (...and does it assume that hatchery plantings do not have a negative impact?)	No	2
III.B.4. Are biological objectives identified for both the short and long-term?		
Reviewers: To some extent, but long-term planning is not always stated explicitly	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: Because ongoing programs are described only in general terms, it is unclear to reviewers whether the plan is complementary to other programs.	?	2
III.B.6. *Clean Water Act*: 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?[8]		
Reviewers: The management plan discusses links to the TMDL process in several sections of the plan but too briefly, and often the relationships are not described explicitly.	Partial	2

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

III.B.7. *Endangered Species Act*: 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?[9]		
Reviewers: The Management Plan (although not always explicitly) adequately describes links between objectives for aquatic species and ESA listings, but what about the Columbia River spotted frog?	Parti	2
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: Differences are not clearly discussed.	na	na

III. C. Strategies[10]		
III.C.1. **Internal Consistency of the Plan.** Does the Strategies Section of the Management Plan explain the linkage of the strategies to the subbasin biological objectives, vision and the subbasin assessment? (Council Questions 2 and 3)[11]		
Reviewers: Although the strategies are linked generally, explicit linkage of strategies, objectives, and vision is not included in the plan. The discussion of strategies indicates that they cannot be developed adequately until some key data gaps are filled.	Yes	0
III.C.2. **Consistency with the Fish and Wildlife Program.** Are the Strategies proposed in the subbasin management plan consistent with those adopted in the program? (Council Question 4)		
Reviewers: In general, the strategies are consistent with the program.	Yes	1
III.C.3. **Consideration of Alternative Management Responses.** Does the Strategies Section explain how and why the strategies presented were selected over other alternative strategies (e.g. passive restoration strategies v. intervention strategies)? (Council Question 5)[12]		

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

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

[11] This is one of the most important review questions. The set of seven questions from Council asks the ISRP to evaluate the internal consistency, scientific soundness, and thoroughness of subbasin plans. Internal consistency means there is scientific support for the conclusion that the strategies proposed in a subbasin plan will in fact address the problems identified by the subbasin assessment; i.e., does the Strategies Section take into account not only the desired outcomes, but also the physical and biological realities of the subbasin environment. The ISRP's Subbasin Plan Logic Path flow chart, attached below, provides a straightforward illustration of the logic path reviewers should look for in subbasin plans. Rick Williams, ISRP chair, developed and has presented this flow chart to subbasin planners around the basin, emphasizing the importance that subbasin plans demonstrate a clear logic path.

[12] The 2000 Fish and Wildlife Program directs that the subbasin management plan's strategy section must include an explanation of how and why the strategies presented were selected over other alternative strategies (e.g. passive restoration strategies v. intervention strategies). The Council does not expect subbasin plans to be structured like an Environmental Impact Statement with a list of alternative actions and descriptions of why each were not

Reviewers: This is partially accomplished. For example, these are considered with regard to alternative objectives for fisheries (on the part of irrigators and fish and wildlife agencies) in relation to the irrigation project. For example, can irrigation waters be used to support fisheries that substitute for lost fisheries?	Yes	2
III.C.4. **Prioritization.** Does the Strategies Section describe a proposed sequence and prioritization of strategies?		
Reviewers: There was no explicit prioritization given. This was a glaring omission because they are starting from a position of very little data and have a very long and large list of things to do.	No	3
III.C.5. **Additional Assessment Needs.** Does the Strategies Section describe, if necessary, additional steps required to compile more complete or detailed assessment?		
Reviewers: Data gaps are often identified and strategies to fill them given.	Yes	0
III.C.6. **Clean Water Act:** 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?		
Reviewers: The plan appears to be consistent with the TMDL process but more information is needed.	Partial	2
III.C.7. **Endangered Species Act:** Recognizing that ESA-based efforts are in various states of completion across the Columbia basin, does the management plan 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?		
Reviewers: Although there are isolated discussions throughout this section describing the ESA goals for species and how they are related to objectives and strategies, there is no integrated synthesis.	Partial	2

III.D. Research, Monitoring, and Evaluation

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

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

III.D.1	**Research:** Does the RME section of the plan describe a research agenda with specific conditions and situations identified in the subbasin that will	*(Y)es, (P)artial,*	*Need for additional*

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.

	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?	*(N)o*	*treatment (0-4)*
Reviewers: The RME plan is not well developed at this point; there is a very long list of potential research questions without an overall synthesis. There is also a list of "Priority Needs", but how all of the goals, questions, needs, etc. would be organized into a cohesive research agenda is unclear -- but that just might need some articulation.		Partial	2
III.D.2	**Monitoring Objectives:** Does the RME subsection identify what kind of information needs to be collected in order to determine if the plan's vision and objectives are being met? I.e., what indicator variables will be monitored?		
Reviewers: Although the inclusion of "Suggested Table of Contents (for any entity implementing an M&E element)", "Basic Statistical Considerations", "Sampling Design Considerations", and "Indicators" sections (for example) are quite helpful, much of this section would benefit from some prioritization.		Partial	2
III.D.3	**Monitoring Indicators:** Does the RME subsection identify measurable indicators of physical, chemical, biological, or socioeconomic conditions that may act as environmental signposts by which progress towards achieving the stated vision can be evaluated? E.g., does the RME subsection describe performance standards or quantitative benchmarks for reference conditions against which observations can be compared? Does the plan prioritize which indicators are most needed to answer management questions (include a short list)?		
Reviewers: All monitoring indicators given were only biological in nature, and explicit benchmarks are not provided for many strategies.		Partial	2
III.D.4	**Data and Information Archive:** Does the RME subsection describe an infrastructure to archive relevant data and meta data generated through monitoring efforts in existence for the subbasin (e.g., locally or at a regional Fish and Wildlife Program funded database such as StreamNet, the Fish Passage Center, or DART)? Specifically, does the RME subsection include discussion of quality assurance/quality control (QA/QC), data management and analysis, and data reporting?		
Reviewers: The Data Management section was generally fairly extensive.		Yes	0
III.D.5	**Coordination and Implementation:** Does the RME subsection describe who will collect the information and data collection methods whether collection is done by a subbasin, provincial, state, or a regional entity, or a combination of entities? This should include a description of coordination with regional RME efforts in the basin (Regional Partnership, Action Agencies Research, Monitoring, and Evaluation Plan, etc) with standardization of data methods. It should also include estimates of how much the proposed M and E will cost.		
Reviewers: The plan does not provide an explicit process for coordination of data collection and management, although there is some text noting the importance for coordination.		No	3

III.D.6	**Summary Question. RME Logic Path (Evaluation and Adaptive Management):** Does the subbasin plan provide a scientifically supportable procedure for refining the biological objectives as new information becomes available about how fish, wildlife, and the environment interact, and in relationship to how the plans are implemented over time? (Council Question 7) Specifically, does the RME subsection describe a scientifically sound logic path for how to test if the subbasin plan's strategies are helping to reach the stated vision and objectives? I.e., Is the RME agenda adequately framed around the relationships between the assessment data and the stated vision, biological objectives, and strategies in describing uncertainties?		
Reviewers: The RME logic path is seriously deficient in terms of coordinated monitoring and data management.		Partial	3
	Overall impression and evaluation of the Management Plan: As needed elaborate on your evaluation of the various Sections enumerated above. If the plan provides additional analysis beyond what is laid out above in the checklist please comment here (e.g., socio-economic descriptions or analysis).		
Reviewers: The Management Plan has made progress on a number of the elements requested by the Council. However, the plan's organization and presentation, and incomplete sections such as prioritization, require significant treatment before the document will be useable for implementation.		No	3

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 identity 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:**		
Reviewers: This is not clear, given the state of the plan. Although the plan appears consistent with the eight principles, its lack of analysis of trajectories of ecosystem change, wildlife species, critical evaluation of QHA results, and coordinated monitoring and data management program make it unlikely that it would be used to help implement mitigation, conservation, and restoration efforts as effectively as possible.	Partial	3

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