

Lower Columbia Fish Recovery Board Plan: Elochoman, Grays, Cowlitz, Kalama, Lewis, Washougal, Little White Salmon, Wind

Review Summary

The presentation of the Lower Columbia Fish Recovery Board's (LCFRB) plan was generally well received by the panel of reviewers. The presentation gave a relatively complete and coherent picture of what the LCFRB is trying to accomplish. Unfortunately, the reviewers were more impressed with the presentation than with the actual written document, and it is the written document that determines whether the plan can or will be effectively used.

This is not a subbasin plan as envisioned by the Fish and Wildlife Plan. It is a recovery plan with a narrow focus on listed anadromous species. The wildlife component is nearly entirely missing. Wildlife are not included as focal species except at the provincial level (Volume 1). The individual subbasin plans should be stand-alone documents with supporting technical details located in appendices. The Management Plan should have biological objectives, strategies and Research Monitoring and Evaluation (RME) sections that reflect the needs and condition of the ecosystem, are logically related and coherent, and tied specifically to needs and conditions in the subbasin. Placing major parts of the Management Plans under the Provincial Plan (Volume 1) does not capture the unique features, conditions, and needs of the individual subbasins. For example, the Lewis River fall Chinook may have unique life histories that may be adapted to the effects of external factors (see McIsaac, D.O. 1990. Factors affecting the abundance of 1977-79 brood wild fall chinook salmon (*Oncorhynchus tshawytscha*) in the Lewis River, Washington. Ph.D. dissertation, U. of Washington, 174 p.). Fragmentation of some subbasins, such as the Cowlitz and Lewis into parts works against an ecosystem approach to recovery. The approach used in the plans makes it difficult to ascertain how priorities will be determined among the actions listed for the various subbasins. Whether this approach is adequate for purposes of amending into the Fish and Wildlife Program is a question for the Council. The ISRP/AB recommends a major revision to make the plans consistent with the Technical Guide for subbasin planners.

The Provincial Context is well done and could have provided a useful guide to the preparation of the individual subbasin plans. Volume 1 sets up a good approach at the provincial level, but that approach is not carried through to the subbasin level. All of the documents in aggregate contain a lot of good information, but it is scattered among several files and not organized for easy and efficient use. The information in the plans is arranged in a manner that is so confusing that the reviewers had to spend much of their time searching through the myriad documents of the plan to find specific pieces of information. The Council's recommended format is designed to prevent this, and the documents should be formatted to conform to that outline.

The premise of the plan is that it serves as a recovery plan for Washington Lower Columbia salmon and steelhead populations while also satisfying the requirements of the Northwest Power and Conservation Council Fish and Wildlife Plan for a subbasin plan for eight full and three partial lower Columbia subbasins. It likely does the former but does not do the latter.

The negative comments about the organization and format of the plan should not reflect poorly on the tremendous amount of work that evidently went into the collection and preparation of the information contained in the documents. The presentation of information derived from EDT in the subbasin plans is very well done, although it needs more synthesis. The authors could have effectively used the information on recruits per spawner to better make assumptions about productivity in the habitat. The technical foundation's examination of genetics and natural spawning is very good, but in the individual subbasins it is not clearly expressed. The external environmental factors are not given enough attention.

Review Checklist

I. The Subbasin Assessment			
(See generally pages 4-6, 9-10 of the Technical Guide; the checklist is derived from 18-24 of the Technical Guide.) Reviewers should consider the soundness, completeness, analytical approach, and transparency (documentation of methods and decision-making process) of the following components of a subbasin assessment.			
I. A. Subbasin Overview			
<i>General Question to be addressed: Does the assessment provide the geographical, demographical, and environmental context for fish and wildlife resources in this subbasin? The Council specifically asked that the independent scientific review evaluate whether the subbasin assessment was thorough and substantially complete. The following checklist is to aid reviewers in that determination.</i>			
I. A.1. General Description		(Y)es, (P)artial, (N)o	Need for additional treatment (0-4)
I.A.1.1	Does the assessment provide a general orientation to the subbasin (location, size, distinguishing natural and cultural features, land use, land ownership) and an overview of jurisdictional authorities (state, county, federal lands, tribal lands and fishing rights)?		
<p>Reviewers' General Comment: Most subbasin descriptions give very general treatment of major resource uses, population centers, and conditions for salmon. In this general description section, the focus should not be directed by the choice of focal species. Many of the plans focus too heavily on anadromous fish. The plans need better treatment of upland habitats and other aspects of the subbasin that are not directly related to salmon. The plans appear to be recovery plans for listed anadromous species. Wildlife are nearly entirely missing and they are not included as focal species. The planners should have picked a focal wildlife habitat such as Late Seral Forest. The plans need to take an ecosystem approach including wildlife, upland terrestrial processes, etc. Whether the narrow focus taken in these plans is adequate for purposes of amending the Fish and Wildlife Program is a question for the Council.</p> <p>Some of the subbasins would have benefited from an Introduction that followed the Technical Guide for Subbasin Planners. It is impossible to determine who did the planning, how they did it and if there are any contrary views.</p> <p>Elochoman: The plan does not adequately describe the natural and cultural</p>		Partial	3

	<p>features of the Elochoman.</p> <p>Grays: The Overview section (3.1) provides the location, size, land use and ownership of the subbasin. There is a list of towns, but no map of towns; there's no indication of the population size of the towns, but there is an indication of projected growth rates. The ownership of land is mapped. The Gray's land it mostly commercial forestland along with some agriculture and state land.</p> <p>Kalama: Most of this subbasin is private forestland. The plan has a very brief overview description that is aimed at the conditions for anadromous fish. It provides the location, size, land use and ownership of the subbasin. The plan offers a list of towns, but no map of towns; there's no indication of the population size of the towns, but there is an indication of projected growth rates. The ownership of land is mapped.</p> <p>Lewis: The overview provides an adequate description of this subbasin. It is comprised mostly of public forestland, although the description is targeted to anadromous fish. The plan needs a better description of the effects of the Mt. St. Helens eruption on fish and wildlife habitat.</p> <p>Little White: The orientation is brief and too oriented toward salmon production. The authors could have included more information on the subbasin's cultural importance to the tribes; it was a major summer camping site for hunting and berry picking. More information should be provided on the economic base and resource uses in the subbasin.</p> <p>Washougal: The description of this subbasin is brief, but more comprehensive than others. It includes short descriptions of human settlements, resource uses and likely population pressures.</p> <p>Wind: The overview of the wind subbasin is generally complete. Land ownership is predominately federal. Most of the information is a description of the physical features of the subbasin in terms of how they relate to salmon and steelhead recovery.</p>	
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)?	

	<p>Reviewers' General Comment: For individual subbasins the description of the macro-environment is very brief, general and focused on how conditions affect salmon. For some of the subbasins, land cover and vegetation are described, but its water resources are not. Land uses and modifications are not described.</p> <p>For some of the subbasins, there is no indication of agricultural use of water, so perhaps none is withdrawn. The authors should definitively say whether or not water is used for agricultural purposes.</p> <p>Little White: The macro-environment is not described with enough detail. The discussion is restricted to a very general description of the Little White's geology, climate, and land uses.</p> <p>Wind: This plan's examination of the macro-environment would have benefited from a more complete discussion of water uses, particularly the location and amount of water withdrawals and major well systems.</p>	Partial	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)?		
	<p>Reviewers' General Comment: In general the subbasin plans do not present the anthropogenic disturbances by source, but the reader can infer that forestry and agriculture are the principal disturbances. The effects of urbanization, water development, and transportation are not discussed in many of the subbasin overviews. These are important factors; examining them would enrich the plan.</p> <p>Little White: The examination of anthropogenic disturbances is disappointing in its lack of detail. Splash damming is hardly mentioned (if at all) but is a major cause of habitat loss.</p> <p>Wind: Overall, the Assessment presents a good overview of anthropogenic disturbances.</p>	Partial	2
I.A.1.4	<p>Does the assessment provide a list of native and non-native fish and wildlife species present in this subbasin including those species that:</p> <ul style="list-style-type: none"> a. have been designated as threatened or endangered under the Federal Endangered Species Act or state equivalents, b. have been recognized by applicable federal, state, or local resource management agencies, or by the Nature Conservancy or state heritage program, as being especially rare or significant in the local area, c. have special ecological importance within the subbasin, d. are recognized by Native American tribes as having special cultural or spiritual significance, or e. are not native to this subbasin? 		
	<p>Reviewers' General Comment: Species that are neither focal or of interest are covered in the regional overview but not in the individual subbasin plans. Information on wildlife species is not included in the subbasin plans.</p> <p>Aquatic focal species and species of interest are covered in subbasin plan. There is no explicit discussion of ESA with regard to these species other than to indicate which are listed. There is a discussion of the status of</p>	Partial	3

<p>populations of the four focal species of <i>Oncorhynchus</i>, but it is not clear how the assessments of the populations have been made.</p> <p>Elochoman: Non-native species are listed in other volumes of the Lower Columbia River Provincial (LCRP) Plan, but not here. Other selected native species are listed in the Volume III of the Lower Columbia River Provincial (LCRP) Plan, but non-native species are not listed in this subbasin plan.</p> <p>Lewis: Several non-native species are listed in other volumes of the Lower Columbia River Provincial (LCRP) Plan, but not in this subbasin plan. Aquatic focal species only are covered in the subbasin plan.</p> <p>Little White: The non-salmonids are under-recognized. Missing from the general list of fishes known to occur in the Lower Columbia are a number of species, including the western brook lamprey, any of the three or four dace species that occur there, redbreast shiners, mountain and bridgelip suckers, and none of the freshwater sculpins (except for coastrange). Surprisingly, bull trout are not listed, and both brown trout and eastern brook trout are known from this area, but are missing from the list. Brown trout, brook trout, and introduced rainbow and westslope cutthroat trout occur in lakes in the Indian Heaven Wilderness (often in the same lake!) and have surely impacted the native amphibian fauna in this montane volcanic landscape. There is no discussion in the Assessment or Management Plan of anything other than salmon.</p> <p>Wind: The non-salmonids are under-recognized, as in the Little White Salmon.</p>			
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' General Comment: The subbasin plans only discuss aquatic ESA-listed animals, but not wildlife and plants.</p> <p>Little White: Rare or threatened plants are missing. The headwaters of the Little White Salmon include some of the most important huckleberry harvesting locations for the mid- and lower Columbia tribes.</p>		No	4
I.A.2. Subbasin in the Regional Context		<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' General Comment: The Province is described in the context of the Columbia River basin, but many of the individual subbasins are not adequately characterized in a regional context.</p>		Partial	3

<p>Cowlitz: The plan only generally describes how the Cowlitz relates to the area surrounding it and the rest of the Columbia River basin.</p> <p>Elochoman, Grays, and Kalama: The relation of these subbasins to the rest of the Columbia River basin is not described except for maps of the Washington side of the subbasin below the gorge. It is not an adequate description.</p> <p>Little White: The plan gives very few details of how the Little White Salmon fits with the other subbasins, aside from identifying the sources of donor stocks for hatchery salmon.</p> <p>Washougal: The plan provides little comparison with other subbasins.</p> <p>Wind: The plan does a good job of integrating the Wind with the other subbasins. It does not really address the distinguishing qualities of the Wind subbasin, aside from the fact that 90% of the subbasin is in the Gifford Pinchot National Forest. This is a higher percentage of National Forest land than in most other subbasins.</p>			
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?	Yes	3
<p>Reviewers' General Comment: ESA information is covered well, but bull trout units are not covered adequately (e.g. the Cowlitz-Toutle). The portion of the ESU that uses a particular subbasin is not provided. How each of these subbasins fit into the ESU is not explained. ESA information regarding listed salmonids in the lower Columbia River is very well described in the LCRP Provincial Plan, but more of that information should be included in the specific subbasin plans.</p> <p>Elochoman: In the second paragraph of the overview the plan mentions that Chinook, steelhead, and chum are listed, but there is no discussion of how the Elochoman populations relate to the listed ESU's.</p> <p>Grays: In section 3.2 the plan mentions that Fall Chinook, winter steelhead, and chum are threatened and that coho are a candidate, but there is no discussion of how the Grays populations relate to the listed ESU's.</p> <p>Kalama: In section 10.2 the plan mentions that Fall Chinook, winter steelhead, and chum are threatened and that coho are a candidate, but there is no discussion of how the Kalama populations relate to the listed ESU's.</p> <p>Little White: The planners say, in effect, that they only have to worry about</p>			

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

<p>the short reach below Drano Lake for natural spawning fall Chinook and chum salmon. These natural stocks have clearly taken a back seat to the hatchery stocks, and most of the Chinook may simply be fish of hatchery origin. The subbasin seems to have been written off for ESA purposes.</p> <p>Wind: It is not clear how the Wind subbasin fits into the ESA, since Chinook, coho, and chum salmon never ascended Shipherd Falls (therefore, technically they are a non-native species). Also, the planners did not mention bull trout, which occur in the Wind River, although they too may have taken advantage of the Shipherd Falls fish ladder. The steelhead description is fine.</p>		
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)?	
<p>Reviewers' General Comment: External environmental conditions that have an impact on the fish and wildlife of these subbasins are glossed over. External environmental conditions are, however, very important for these subbasins and need more specific discussion. For example, are early and late coho affected the same by ocean and plume conditions? Does the life history of fall Chinook in the Lewis River (time of juvenile migration down river) buffer that stock from competition with upriver hatchery releases? Even if the data necessary to fully describe the external effects are not available, such factors should still be noted.</p> <p>In the LCRP Provincial Plan (Volume I) the external effects are generally covered, but they are not covered in the individual subbasin plans.</p> <p>Cowlitz: The estuary habitat is a major limiting factor for fall Chinook. It merits more discussion in the plan.</p> <p>Elochoman: There is a single sentence at the beginning of Section 4.4.5 that says that environmental conditions outside the subbasin affect populations in the entire basin. That appears to be the only pertinent material in the plan and it is not enough.</p> <p>Grays: There is a brief mention in the overview section 3.1 of the external conditions that bear on recovery of salmon in Grays, but there is no summary of the effects other than to say that they are detrimental.</p> <p>Kalama: The plan needs more discussion on the effects of external factors; at least it could provide a list of uncertainties.</p> <p>Little White: The examination of external effects is a bit general, but they planners do discuss how the Bonneville pool has inundated some very important salmon-spawning habitat near the mouth of the Little White River.</p> <p>Wind: External effects are not explained explicitly and could be improved.</p>	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)?	Partial	3
<p>Reviewers' General Comment: The way this topic is covered in the individual subbasins varies. The human element is not adequately covered beyond population growth or conversion of agricultural lands.</p> <p>Elochoman, Grays and Kalama: These plans contain a paragraph that projects population growth rate (but do not give human population size). They state that the conversion of agricultural and forest land to residence land will occur, but they offer no quantitative estimate of the effect of these changes on the ecosystem or hydrology in the long-term. There is no other assessment and no consideration of climate change. Trends are not projected over a 50+ year time range.</p> <p>Little White: The plan did not appear to deal with climate change. Trends are not projected over a 50+ year time range.</p> <p>Washougal: Trends are not projected over a 50+ year time range.</p> <p>Wind: The plan did not appear to deal with climate change. Trends are not projected over a 50+ year time range.</p>			
	<p>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?</p>	Partial	3
<p>Reviewers' General Comment: The plan only provides the environmental context with regards to anadromous fish, and so fails to examine the subbasins as ecosystems.</p> <p>In the overview section of the subbasin plans there are references to the LCRP Provincial Plan. Sometimes the subbasin plans referred to entire sections of the Provincial Plan. It is strongly recommended that each subbasin plan contain all of the required elements so it does not rely on a Provincial Plan to provide critical information. Some of the sections referred to in the Provincial Plan (e.g. RME) are general guides or procedures that are not specific to the subbasins, so they are inadequate. Many of the subbasin plans have no introduction with an overview as described in the Technical Guide</p> <p>Many of the plans have extensive assessment material (apparently derived from EDT) preceded by an overview section, but many elements are missing. The maps alone are a useful indication of geographic context, but there is no indication of human populations. There is an extensive discussion of limiting factors as identified from EDT, including environmental habitat conditions. The context is not adequately tied to resulting status of focal species.</p>			

<p>Little White: The subbasin overview is strongly slanted toward a description of hatchery production and provided a weak connection with naturally produced fish and wildlife. The wildlife discussion is missing.</p> <p>Wind: In general, it appears that the planners provided an adequate context for fish and wildlife restoration.</p>		
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<p>I.B. Species Characterization and Status</p> <p><i>General question: Does the assessment adequately describe the current status of fish and wildlife focal species?</i></p> <p>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.</p>	<p>(Y)es, (P)artial, (N)o</p>	<p><i>Need for additional treatment (0-4)</i></p>
<p>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.</p>		
<p>Reviewers' General Comment: The Provincial Plan identifies focal species for the region. Aquatic focal species are fall Chinook, winter steelhead, summer steelhead, chum, and coho, and bull trout. Other sensitive species, species of ecological interest, and species of recreational interest (non-native species) are also identified in the Provincial Plan.</p> <p>The individual subbasin plans only discuss the aquatic focal species; the aquatic focal species are adequately described. Wildlife and plants are not covered. This approach is not adequate.</p> <p>Little White: The planners only identified "species of interest" (fall Chinook and chum). No resident fish or wildlife species are selected.</p>	<p>Partial</p>	<p>3</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' General Comment: The plan characterizes focal species populations well at the provincial level, with detail provided in different places in the Management Plan and in the technical foundation. The plan offers maps of current and historical distributions of focal species.</p> <p>Much less information is provided for the non-anadromous sensitive species or species of interest.</p> <p>The individual subbasin plans only present information on the aquatic focal</p>	<p>Yes</p>	<p>2</p>

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

<p>species.</p> <p>Cowlitz: Little specific information on focal species populations is described for the native populations given. It is assumed that this information is not available.</p> <p>Elochoman, Grays, Kalama: The plans refer to aggregate populations of each species in these subbasins. The plans describe the metapopulation structure by lists of spawning sites, but not by the relative sizes of the populations or their interactions.</p> <p>Grays and Kalama: Apparently fish of hatchery origin are significant to natural spawning but there is no assessment of either component of what is apparently regarded as integrated populations.</p> <p>Little White: Not much information appears to be available on chum salmon. Five hundred meters is not much room for metapopulation structure development. There is little natural production in the basin.</p> <p>Washougal: The plan offers a generic description of the focal species populations. More detail is needed, or monitoring and evaluation must be undertaken to obtain it.</p> <p>Wind: The metapopulation or subpopulation structure of naturally spawning fish in this subbasin appears to be poorly known or is only generally inferred.</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' General Comment: Brief summaries of population status are provided for each subbasin. Good historical and current status information is provided at the provincial level.</p> <p>Only in a few rare cases did planners provide trend data. The proportion of the hatchery spawners is not provided.</p> <p>Elochoman Grays and Kalama: The one paragraph assessment for each species indicates its ranges of abundance, but does not provide information on how these estimates are made. No age structure is given. HOR's apparently spawn naturally, but there is no rigorous estimate of their numbers. There is no data on recruitment to any life stage. The plans offer no discussion of historical trends.</p> <p>More information is in the LCRP Provincial Plan.</p> <p>Little White: The plan offers a very brief description of the status of natural runs of fall Chinook and chum.</p>	<p>Partial</p>	<p>2</p>

<p>Wind: The plan presents a very good summary of the historic and current status of steelhead, but somewhat limited data appears to exist for other focal fish species. Data are also limited for some wildlife focal species.</p> <p>Trend data are presented; the planners should add steelhead recruit/spawner data to augment the plan's efficacy.</p>		
<p>I.B.4. Does the assessment describe the population's life history, including identifying distinct life stages?</p>		
<p>Reviewers' General Comment: Population's life history is described at the provincial level - in the Management Plan and in the technical foundation documents. These descriptions of life history appear to be generic and not specific to the subbasins. Apparently the planners did not have enough information to discuss differences in life histories among subbasins. Some of the stocks may have unique or distinct life histories such as the Lewis Fall Chinook and north and south migrating coho.</p> <p>Elochoman, Grays, Kalama: Life history is described in one sentence about where and for how long juveniles rear in the subbasin.</p> <p>Lewis: Unique life history is not discussed.</p> <p>Little White: Introduced Chinook and coho stocks come from a wide variety of sources and probably represent an amalgam of life history types.</p> <p>Wind: Introduced stocks come from a wide variety of sources and probably represent several life history types.</p>	<p>Yes</p>	<p>2</p>
<p>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?</p>		
<p>Reviewers' General Comment: See Section 3.2.2.2. This is partial because the plan does not include this information, but the Technical Foundation does. The primary document should provide the links and provide the rationale in the flow of the subbasin plan.</p> <p>The subbasin plans do not discuss genetic information among populations. Nor do they appear to describe genetic effects of hatchery operations. Genetic data are described well at the provincial level.</p> <p>Cowlitz: The possibility of negative interactions between hatchery and wild fish are mentioned, however whether or not those possibilities are actually experienced by the specific populations in the subbasin is not described or explained.</p> <p>Elochoman, Kalama and Grays: The plan refers to a categorical effect of hatchery domestication on wild stocks and indicates that fish of hatchery origin spawn in nature, but no precise character of their population structure is given. The plan does not review the history of hatcheries, which includes issues such as when the hatchery was established, from what broodsource, and the history of transfers and outplants.</p>	<p>Partial</p>	<p>2</p>

<p>Grays and Kalama: Hatcheries are characterized by the goal of supplementing natural spawning, but there is no indication that the genetic impacts of fish of hatchery origin on natural populations are, or are not, being controlled by methods such as restricting natural spawning of fish of hatchery origin, including fish of natural origin in hatchery broodstock, etc.</p> <p>Lewis: Since reintroduction of anadromous salmonids is an important part of the program, a reintroduction plan should have been part of the subbasin plan. The consequences of the interactions between hatchery and wild fish are not given adequate treatment.</p> <p>Little White: The possibility of negative interactions between hatchery and wild fish are mentioned, however whether or not those possibilities are actually experienced by the specific populations in the subbasins is not described or explained. The assumption seems to be that since this is a hatchery dominated stream interactions between hatchery and wild fish are of no consequence. For the most part, the Little White Salmon is managed strictly for hatchery production.</p> <p>Washougal: The genetic diversity portion of this plan could use more specific information, especially data showing the actual spawn timing of hatchery and wild summer and winter steelhead.</p> <p>Wind: The plan generally does a good job of exploring genetic diversity, although there are relatively few direct measurements of the effects of hatchery fish on wild steelhead and cutthroat trout.</p>		
<p>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?</p>		
<p>Reviewers' General Comment: Sections on harvest appear in various places. As one of the Four H's, harvest appears in the limiting factors discussion in the provincial and individual subbasin plans. It also appears in the hypothesis/strategy sections of the plans. The efficacy of the harvest section is variable among the plans. The Wind plan, for instance, is better than the Little White.</p> <p>Elochoman, Grays, and Kalama: The relative effect of harvest on focal species (with regard to other H's) is indicated, but harvest figures and history are not given. How the information in the figures that include harvest is developed is not evident.</p> <p>Little White: The planners give the approximate percentages of salmon caught in different ocean and in-river fisheries, but do not really present harvest trends.</p> <p>Wind: The planners provide generally adequate harvest information for most focal fish species. The harvest of focal wildlife species is only</p>	<p>Partial</p>	<p>2</p>

discussed generally.			
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?			
<p>Reviewers' General Comment: The subbasin plan should be a stand-alone document and these subbasin plans do not stand alone. Only the aquatic focal species are described in the subbasin plans. Information on other focal species is in other documents. This made the draft incredibly difficult to review and to evaluate against the checklist. Currently, there is a big disconnect between the Technical Foundation and the EDT analysis in the subbasins. The authors could have effectively used the information on recruits per spawner to make better assumptions of the productivity in the habitat. The technical foundation's examination of genetics and natural spawning is very good, but in the individual subbasins it is not clearly expressed.</p> <p>Cowlitz: Species characterization and status is adequately described for fish, but no wildlife species are included as focal species in the individual subbasin plans.</p> <p>Elochoman, Grays, Lewis, Washougal and Kalama: The plans offer a general description of the focal anadromous salmon species, but not of any birds or mammals, and the plan provides no justification for its sole focus on salmon. The anadromous salmon species description is cursory.</p> <p>Little White: The focal species characterizations and status are fairly well described for tule fall Chinook, but no wildlife species are selected as focal species. This section is very limited.</p> <p>Wind: The focal species characterizations and status are fairly well described for fish, but no wildlife species are selected as focal species. Overall, the planners did a pretty good job with limited data.</p>		Yes	2

I.C. Environmental Conditions		
<i>General question to be addressed: Does the assessment adequately describe the effect of the environment on fish and wildlife populations?</i>		
I.C.1. Environmental Conditions within the Subbasin		(Y)es, (P)artial, (N)o
I.C.1.1		<i>Need for additional treatment (0-4)</i>
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?		

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.

<p>Reviewers' General Comment: The description of the current and reference condition of the environment in the subbasin is done in a summary fashion, but not in detail. There is a lot of variability amongst the subbasins in the efficacy of their descriptions.</p> <p>Cowlitz: The plan's comparison between potential and historical conditions needs more discussion.</p> <p>Elochoman, Kalama and Grays: This section describes salmon habitat in the subbasins' streams and watersheds and the outcome of a planning process that identifies areas that contribute most to salmon productivity. It refers generally, without quantification, to anthropogenic effects, but it does not explicitly assess status with respect to reference conditions.</p> <p>Grays, Kalama: The section refers to the use of EDT and IWA; EDT is referenced on the subbasin web page but there is no reference for IWA; the report is hard to review because it does not provide support for its methods. The comparison between potential and historical conditions needs more discussion.</p> <p>Lewis: The comparisons between historical and potential conditions in the subbasin need more discussion.</p> <p>Little White: The planners did not attempt to evaluate environmental potential, nor did they attempt to predict future "no new action" conditions, other than to mention that riparian zones will likely recover passively. The comparison between potential and historical conditions in the subbasin needs more discussion.</p> <p>Washougal: Providing more narrative discussion of the comparison between historical and current conditions of the subbasin would be useful.</p> <p>Wind: Overall, the environmental description is adequate. Many of the "reference conditions" are derived from the "properly functioning condition" tables, which do not do a very good job of addressing natural variability (please see the ISAB habitat report).</p>	<p>Partial</p>	<p>2</p>
<p>I.C.1.2</p>	<p>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?</p>	

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

<p>Reviewers' General Comment: The plan uses appropriate assessment units.</p> <p>Elochoman: The plan does not use HUCs, rather it bases its assessment on reaches.</p> <p>Grays, Kalama: The plan probably assesses modification and restoration potential through EDT; but the plan does not use HUCs, rather it bases its assessment on reaches.</p> <p>Little White: The plan offers a cursory assessment of modification and potential for restoration, with comments based mostly on watershed analyses completed a few years ago.</p> <p>Wind: The plan's description of the current condition is okay, but reviewers are uncomfortable with the potential for restoration being based strictly on EDT predictions.</p>		Yes	0
I.C.2. Out-of-Subbasin Effects and Assumptions			
I.C.2.1	<p>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>		
<p>Reviewers' General Comment: Out-of-subbasin effects are described generally in each subbasin plan and in the provincial plan. Out-of-subbasin effects focus on harvest, but the subbasin plans give no assessment of harvest or incidental mortality by species or fishery. The reader is also referred to the provincial summary (Volume One).</p> <p>Lewis: The plan should discuss conditions in reservoirs that might affect reintroduced species. For example, what impact will tiger muskies have on introduced salmonids during transit through reservoirs?</p> <p>Wind: It appears that there is a lot more detail in some of the other chapters, e.g., the estuary, which some reviewers did not have time to read.</p>		Partial	3
I.C.2.2	<p>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>		
<p>Reviewers' General Comment: The plans provide no model that relates the productivity or sustainability of focal species to external effects, there is no quantification of such relationship. The plans offer no quantification of the productivity of focal species in the subbasins, so there is no basis for predicting the effects of changed external conditions.</p> <p>The plans only establish external assumptions for harvest. Some of this information is presented in the regional summary.</p> <p>Little White: The Assessment makes no attempt to calculate the effects of external conditions on productivity for native fall Chinook and chum salmon.</p>		Partial	3

<p>Wind: The plan only gives a few general statements about external factors. This plan does not fully address role of ocean conditions and climate regimes or changes on the subbasin.</p>		
<p>I.C.3. Environment / Population Relationships</p> <p>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>		
<p>Reviewers' General Comment: Environmental factors are analyzed extensively for the focal anadromous species, but not for the other species.</p> <p>The individual plans vary in the quality of their analysis of environmental factors. The attributes that constitute optimal conditions and the ability to provide them are not discussed.</p> <p>The planners should return to the life cycle model, in Volume 1, for each focal species and relate habitat problems to the life stage specific survivals. Sediment shows up as a problem in some plans, but the planners do not show that a limiting factor is, for example, egg survival.</p> <p>Little White: The plan discusses the effects of factors such as disease on the hatchery populations (spring and late fall bright Chinook, and coho salmon), but the only other statements identifying factors affecting life stages are general comments about sediment, temperature affecting spawning survival of resident trout, and the few salmon that spawn in the lowermost mile of the river.</p> <p>Wind: The plan provides a good examination of life stage environmental factors for steelhead; the examination is fair for other species.</p>	<p>Partial</p>	<p>3</p>
<p>Summary comments and evaluation on the Environmental Conditions Section: Does the assessment adequately describe the effect of the environment on fish and wildlife populations?</p>		
<p>Reviewers' General Comment: The plan describes the effect of the environment for aquatic focal species, but not for the broader subbasin.</p> <p>Parts of the Assessments are well done except where Volume One of the provincial plan is referred to. The subbasin plans are not complete stand alone documents. The plans summarize a lot of information, but they need more synthesis to maximize its utility.</p> <p>The plans discuss life stage environmental factors in general terms. They describe conditions and status (impaired, moderately impaired, and functional), but the connection to life stage survival, which is needed to set priorities, is not adequate.</p>	<p>Partial</p>	<p>3</p>

<p>Little White: It appears that relatively little effort went into this section. The statements reference the two watershed analyses, but there is essentially nothing about wildlife. The table in the IWA Results section shows a lot of "no data" entries for the Little White Salmon. Even with the limited data available, the planners should have done more.</p>		
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<p>I.D. Ecological Relationships</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>I.D.1. Inter-species Relationships</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 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>		
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<p>Reviewers' General Comment: Ecological interactions are discussed at the Provincial level in Volume One. The individual plans note wild fish/hatchery fish interactions, but readers are referred to a section on ecological relationships in Volume One of the Provincial Plan for more information.</p> <p>The plans do not discuss the influences of aquatic focal species on wildlife. The potential role of salmon and steelhead in terrestrial and aquatic nutrient enrichment is not covered.</p> <p>Lewis: Species interactions are not fully discussed. An especially important topic that is not examined is the interactions of species in the reservoirs.</p> <p>Wind: This plan does not provide much discussion on how changes in fish habitat would affect wildlife or vice-versa. The assumption seems to be that improving riparian, floodplain, and flow conditions would be beneficial to both, which is probably adequate. Ecological interactions, such as the effect that Chinook have on steelhead, are not fully considered.</p>	<p>Partial</p>	<p>3</p>
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<p>I.D.2. Processes and Functions</p> <p>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>		
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<p>Reviewers' General Comment: Key ecological functions for species within this subbasin are discussed in the context of each of the aquatic focal species. The plans do not discuss the nutrient input from salmon carcasses. The plans examine habitat factors such as sediment, bank stability, temperature, LWD, etc. The processes that tie these together to form and maintain habitat are not analyzed.</p> <p>Little White: The planners note that reductions in road density and the maturing of forest stands will gradually reduce temperature and fine</p>	<p>Partial</p>	<p>2</p>
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<p>sediment, as well as eventually contribute large woody debris, but details concerning how this will occur are lacking.</p> <p>Wind: The planners did a good job, although they do not appear to recognize the potential benefits of natural disturbances such as landslides, instead of just the short-term harm. The plan identifies key ecological functions for species in this subbasin by implication only.</p>		
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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.

<p>Reviewers' General Comment: Limiting factors are identified for each subbasin in a very general way. At the Provincial level, limiting factors are described for each of the four Hs, for each species. These are done in great detail for focal species, and in less detail for all of the other species. A listing of threats, which are the "human-derived activities that have created and/or are perpetuating the limiting factors," follows the description. Examples of threats are water withdrawals, urban development, forest practices, mining, recreation, etc. The examination of historic and current limiting factors is variable across the subbasins. Much of the relevant information is scattered throughout the documents, but it is not adequately presented in the subbasin plans.</p> <p>Cowlitz: The plan does not adequately describe historic factors. Current factors are described in detail, but ecological processes and functions are not adequately explained. The plan should go beyond its summaries of factors and synthesize information to explain how ecological processes that form and maintain habitat have been affected.</p> <p>Elochoman: The Elochoman subbasin plan does not explicitly describe historical conditions, declining ecological functions, or processes; however it has an extensive analysis, on a fine scale, of current factors that inhibit focal species. The key factors that are currently limiting the focal fish species have been correctly identified.</p> <p>Grays, Little White and Kalama: The Grays and Kalama subbasin plans do not explicitly describe historical conditions, declining ecological functions, or processes; however they have an EDT analysis, on a fine scale, of current factors that inhibit focal species. There is no explicit consideration of out-of-subbasin factors or conditions that inhibit focal species. The plan should go beyond its summaries of factors and synthesize information to explain how ecological processes that form and</p>	<p>Partial</p>	<p>3</p>
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<p>maintain habitat have been affected.</p> <p>Lewis: The plan identifies limiting factors, but how they inhibit ecological processes is not given adequate treatment.</p> <p>Little White: This plan puts a heavy emphasis on hatchery production; their main concern for historic and current conditions appears to be the short reach between the hatchery and Drano Lake.</p> <p>Wind: The Forest Service bases most of its limiting factor analysis on previous watershed analyses. Given that the fish and wildlife habitat is largely intact (but improvable) in this subbasin, the analysis fails to recognize the limitations to recruitment imposed by external environmental conditions.</p>		
<p>I.E.2. Key Findings</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' General Comment: Key findings and information are spread out over several documents, but are not synthesized in a way that directly answers the questions posed here.</p> <p>Limiting factors are summarized, but not synthesized. The performance of focal species in relation to the environment is not clearly presented. The plans do prioritize protection/restoration of subwatersheds, reaches, and habitat attributes.</p> <p>Little White: The planners rely heavily on somewhat dated watershed analyses for habitat conditions and limiting factors. Their analysis of privately owned lands is weak.</p> <p>Wind: The planners rely heavily on Forest Service watershed analyses for habitat conditions and limiting factors. Their analysis of privately owned lands is not as strong, probably because they have less data.</p>	<p>Partial</p>	<p>3</p>
<p>I.E.3. Subbasin-wide Key Assumptions/Uncertainties (“Working Hypothesis”)</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>Reviewers' General Comment: Working hypotheses are included in a Provincial Plan in a section on strategies and measures. These are organized around the four Hs and "ecological interactions." They are accompanied by good descriptions of strategies, but they are not prioritized, so they become a huge "shopping" list of good things to do. Strategies for other species are not defined, except to say that strategies that improve conditions for anadromous focal species will also help non-focal species. Working hypotheses are not identified in the individual</p>	<p>Partial</p>	<p>3</p>

<p>subbasin plans.</p> <p>Elochoman: Rather than consider any single species or community assessments in the formation of a holistic view of the Elochoman resources, rather than providing a foundation for hypothesis formation about ecologic behavior and human intervention, the planners have instead assessed reaches and subwatersheds in the subbasin with respect to riparian functionality, hydrology, sedimentation and thereby identified priority areas and limiting factors for the focal species.</p> <p>Little White: Key uncertainties are not made clear.</p> <p>Wind: Key uncertainties are not made clear.</p>		
	<p>Overall impression and evaluation of the Assessment: Does the assessment adequately synthesize the information regarding the health and functioning of this subbasin ecosystem? Does it adequately: a) bring together the single-species and community assessments to form a holistic view of the subbasin’s biological and environmental resources, b) provide a foundation for the development of scientific hypotheses concerning ecological behavior and the ways that human intervention might prove beneficial? As needed elaborate on your evaluation of the various Sections enumerated above. If the plan provides additional analysis beyond what is laid out above in the checklist please comment here (e.g., socio-economic descriptions or analysis).</p>	
<p>Reviewers’ General Comment: The Assessments in the subbasin plans did not take an ecosystem approach; they focused exclusively on listed stocks of anadromous fish. The relevant information is too scattered, it is up to the reader to hunt down pertinent pieces of information and coalesce them.</p> <p>The Assessments are adequate, with the exceptions of them possessing no selected wildlife species, and their incomplete assessments of out-of-subbasin effects. The Assessments would have benefited significantly, however, from the inclusion of the information referred to in the LCRFRP Provincial Plan. The Assessments have compiled a lot of information that is summarized in several tables and figures. This information needs integration and synthesis in the subbasin plans.</p> <p>Grays and Kalama: Rather than consider any single species or community assessments in the formation of a holistic view of the resources, and rather than providing a foundation for hypothesis formation about ecologic behavior and human intervention, the planners have, instead, assessed reaches in these subbasin with respect to riparian functionality, hydrology, sedimentation and thereby identified priority areas and limiting factors for the focal species.</p> <p>Little White: This Assessment cannot be given a passing grade. The authors describe a hatchery-dominated system and repeat its production objectives. There is very little discussion of conservation in the Assessment. Wildlife are overlooked. Natural production of salmonids is not a priority.</p>	<p>Partial</p>	<p>3</p>

Wind: The habitat portion of the Assessment is pretty thorough. The river system has been changed quite a bit by the Carson hatchery. The planner's Assessment of all the different hatchery stocks on the native fauna is a little weak.		
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<p>II. The Inventory <i>(This checklist section was developed from pages 11-12 of the Technical Guide.)</i> <i>Reviewers should consider the soundness, completeness, analytical approach, and transparency (documentation of methods and decision-making process) of the following components of a subbasin inventory, specifically whether the inventory includes an assessment of the adequacy of current legal protections, plans, and projects to protect and restore fish, wildlife, and ecosystem resources. Does the inventory adequately synthesize past activities and their biological achievements? Planners were requested to, as applicable, describe the extent to which these programs and activities extend beyond the subbasin to a larger scale (provincial and basin-wide).</i></p>			
II.A. Existing Protection		<i>(Y)es, (P)artial, (N)o</i>	<i>Need for additional treatment (0-4)</i>
II.A.1	Does the inventory identify areas with protections through stream buffers, municipal or county ordinances, conservation designations, or water resources protection?		
<p>Reviewers' General Comment: Information about areas with protections through stream buffers, municipal or county ordinances, conservation designations, or water resources protection is provided for each subbasin.</p> <p>Cowlitz: The plan presents information on existing protections in generic terms.</p> <p>Elochoman: In section 4.5 there is a listing of 'Protection Programs' implemented by a range of public agencies. For each listing there is a list of codes for 'protection measures' (which appear to be obscure), it is difficult to tell if these measures are associated with particular areas.</p> <p>Grays: The plan presents information on existing protections in generic terms. In section 3.5 there is a listing of 'Protection Programs' implemented by a range of public agencies. There is no inventory of protected areas, however.</p> <p>Kalama: In section 10.5 there is a listing of 'Protection Programs' implemented by a range of public agencies, There is no inventory of protected areas, however.</p> <p>Little White: The plan presents information on existing protections in generic terms. There is a general description of federal and state regulations.</p> <p>Wind: The plan's Inventory of existing protections is generally complete.</p>		Yes	1
II.A.2	Does the inventory assess the adequacy of protections for fish, wildlife, and ecosystem resources?		

<p>Reviewers' General Comment: The adequacy of protections for fish, wildlife, and ecosystem resources is assessed to some extent, especially through the gap analysis done for each subbasin and the list of area-specific actions for addressing gaps. The adequacy of protections is not evaluated, except in generic terms. The obvious question is, given the protections that are in place, why are the focal species in their present condition?</p> <p>Wind: The adequacy of existing protections is only assessed in a couple of instances. The plan discusses state and federal regulations in general, but it does not go into a lot of details with respect to specific protections in the reaches flowing through private lands.</p>		Partial	3
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?		
<p>Reviewers' General Comment: Short summaries of applicable local, state, tribal, and/or federal fish and/or wildlife management plans and water resource management plans that affect fish and wildlife are provided for each subbasin. In some of the subbasin plans there is an annotated list of programs for protection and for restoration. The programs are not reviewed with regard to their effectiveness.</p> <p>Little White: The plan's presentation of applicable management plans is clear with respect to hatchery operations, but the plan contained scant discussion of management plans that pertain to wildlife or water resources.</p> <p>Wind: Overall, this section is complete.</p>		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.)		
<p>Reviewers' General Comment: The Inventory does not directly 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. The plans do not develop a relationship between the effectiveness of the protection and restoration programs and a future benchmark of habitat functionality.</p> <p>Little White: Currently, the US Forest Service manages most of the watershed; however, the Inventory does not assess the effectiveness of the Gifford Pinchot Forest Plan.</p>		No	3

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' General Comment: 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 are adequately described.		Yes
There is no summary of the APRE or HGMP reports for the subbasins.		1
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' General Comment: Existing management programs are described by subbasin. Items such as the responsible party, the funding source, and the program's relationship to other activities in the subbasin are not clearly presented.		Yes
		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' General Comment: The plans vary in the extent that each subbasin's Inventory identifies the limiting factors or ecological processes that existing activities are designed to address.		Partial
		3
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' General Comment: The evaluation of the performance of existing management programs is not done.		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' General Comment: They have a table of actions without describing the gaps they are trying to fill. The assessment of gaps that proposed strategies are trying to fill is done, but in very general and generic terms.		Partial
Lewis: The Lewis subbasin plan makes no mention of the need to prepare a reintroduction plan.		3
Little White: Given the emphasis on hatchery production, the analysis of		

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?

<p>limiting factors within the subbasin is generally weak and based on generic assumptions (fine sediment and higher temperatures = "bad for fish"). There really is not any attempt to assess how data gaps are being filled, or even what working hypotheses are being used to make restoration recommendations.</p> <p>Wind: The gaps between existing and potential actions are fairly well addressed, but design inadequacies are not well addressed.</p>		
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	<p>Overall impression and evaluation of the Inventory: As needed elaborate on your evaluation of the various Sections enumerated above. If the plan provides additional information or analysis beyond what is laid out above in the checklist please comment here (e.g., socio-economic descriptions or analysis).</p>
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<p>Reviewers' General Comment: The Inventory is not presented as an Inventory section of a subbasin plan, but as part of the gap analysis for each subbasin that leads to proposed strategies and actions. It provides useful information.</p> <p>Cowlitz, Elochoman, Wind and Washougal: The Inventories are generally adequate, but additional details are needed describing the effectiveness of the existing protections and management programs. The Inventory's gap analysis is too generic to be useful.</p> <p>Grays and Kalama: The Gap Analysis has an annotated list of programs bearing on protection or on restoration, but it does not fully describe the programs, identify responsible authority, identify relationships, identify limiting factors, summarize accomplishments, and identify inadequacies, etc. The Inventory's gap analysis is too generic to be useful.</p> <p>Lewis: The inventory is generally adequate, but additional details are needed describing the effectiveness of the existing protections and management programs. Failures in existing programs are not adequately covered.</p> <p>Little White: The Inventory is very general, and does not provide the details needed to make intelligent decisions for restoring fish and wildlife habitat above the hatcheries. The Inventory's gap analysis is too generic to be useful.</p> <p>Wind: The general socio-economic analysis (Technical Foundation Volume V) is interesting, but not very specific to the Wind subbasin. The past successes and failures of existing programs should be included.</p>	<p>Partial</p>	<p>3</p>
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<p>III. The Management Plan <i>(Derived from pages 12-16 of the Technical Guide.)</i> Reviewers should consider the soundness, completeness, analytical approach, and transparency (documentation of methods and decision-making process) of the following components of a subbasin management plan.</p> <p>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</p>
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<p>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).</p>		
<p>III.A. The Vision for the Subbasin</p> <p>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):</p>	<p><i>(Y)es, (P)artial, (N)o</i></p>	<p><i>Need for additional treatment (0-4)</i></p>
<p>Reviewers' General Comment: The vision is not really a vision for the region or the collection of subbasins. Rather, it is a vision for recovery of listed stocks. A one-size-fits-all vision does not apply to all of these subbasins. There is a single vision statement for the province and, therefore, all eleven of the subbasin plans. There should be a separate vision section in each subbasin plan that is specific to that subbasin. These subbasins all have unique characteristics and potential that should be recognized.</p> <p>Elochoman, Grays, Kalama: There is no vision section. There is no management plan. The Elochoman plan ends with the Assessment, which is called the "Program Gap Analysis."</p> <p>Little White: There is no vision statement, although reviewers assume it is to continue to produce hatchery smolts: two million upriver bright fall Chinook, one million spring Chinook, and one million coho. The plan said there is no interest in supplementation.</p> <p>Wind: Fixed habitat standards (the plans desired future conditions), are not always the best way to set goals, but they did spell out their vision clearly. It would have been nice for the plan to say more about reforms in the way the hatchery is operated.</p>	<p>Partial</p>	<p>3</p>
<p>III.B. Biological Objectives</p> <p>Does the Biological Objectives Section of the Management Plan describe physical and biological changes within the subbasin needed to achieve the vision?</p>		
<p>Reviewers' General Comment: There is no biological objectives section in the plans, other than in the Wind plan. There are no Management Plans.</p> <p>The objectives are found only in the Provincial Plan (Volume 1). The region wide objectives could provide useful guidance to the development of subbasin objectives, but no subbasin specific objectives are given in the plans. These subbasins have unique characteristics and potential that should be recognized.</p> <p>Objectives for wildlife are very general ("increase the viability..." and "support and maintain...") and are only presented in the Provincial Plan and not included for each subbasin. This again reflects the anadromous-centric focus of the plan.</p>	<p>Partial</p>	<p>3</p>

<p>Cowlitz, Kalama: The plan provides information that is related to the biological objectives, but there is no biological objectives section and no objective statement as described in the guide for planners.</p> <p>Little White: The only biological objectives are to attain a low population viability for naturally spawning tule fall Chinook and a medium viability for naturally spawning chum salmon. Numerical objectives are not given.</p> <p>Wind: The biological objectives are stated clearly.</p>		
<p>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</p>		
<p>Reviewers' General Comment: Other than the Wind subbasin plan, the plans are inconsistent with basin-level visions, objectives, and strategies adopted in the program in that they are narrowly focused on the needs of a few anadromous stocks, rather than being broadly ecosystem based.</p> <p>Kalama: The subbasin plan does not have statements of biological objectives as defined in the technical guide. Much of the information needed to write the objectives is scattered through the text.</p> <p>Little White: If the planners had taken the upper watershed seriously and identified some focal species (resident fish and wildlife), they could have done much more with this section.</p> <p>Wind: This plan's biological objectives are generally consistent. This subbasin has the potential to contain excellent habitat because of the large amount federal ownership.</p>	Yes	2
<p>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.)</p>		
<p>Reviewers' General Comment: The planners describe a good logic path in Volume One, but the information scattered across the basin is not pulled together in a manner consistent with the logic path.</p> <p>Little White: The biological objectives are not based on the Assessment. The planners only state that they do not want the native Chinook and chum to be extirpated.</p> <p>Wind: The plan appears to adopt a one-size-fits-all set of habitat objectives (it is assumed that the other subbasins have the same ones), rather than tailoring the habitat objectives to specific conditions in the Wind.</p>	Partial	3
<p>III.B.3. Where possible, are the biological objectives empirically measurable and based on an explicit scientific rationale; i.e., quantitative with measurable outcomes?</p>		

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.

<p>Reviewers' General Comment: The extent to which biological objectives are empirically measurable and are based on a scientific rationale is variable across the subbasins. The planners provide numerical objectives for the ESA-listed populations in the subbasins.</p> <p>Recovery objectives are specific and measurable. Objectives for other (non-salmonid) species are too general to be measured. Little scientific rationale is given for them. Objectives for the recreational species are very general ("adaptively manage...").</p> <p>Wind: The plans biological objectives are generally empirically measurable.</p>	Partial	2
III.B.4. Are biological objectives identified for both the short and long-term?		
<p>Reviewers' General Comment: Other than for the Wind subbasin, short and longer-term biological objectives are not identified or discussed.</p> <p>Wind: Short and longer-term biological objectives are generally identified.</p>	Partial	3
III.B.5. Are the biological objectives complementary to programs of tribal, state and federal land or water quality management agencies in the subbasin?		
<p>General Reviewers' Comment: Other than for the Wind subbasin the extent to which the plan's biological objectives are complementary to programs of tribal, state and federal land or water quality management agencies in the subbasin is not discussed.</p> <p>Wind: The planners assume the Carson hatchery will continue to propagate an introduced species (Chinook). If everyone agrees with that objective, then the plan is generally compatible. It is important to note that the recommendation to remove Hemlock Dam has met with some local resistance (not mentioned in the plan) because the reservoir is apparently the only swimming reservoir in Skamania County.</p>	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? ⁸		
<p>General Reviewers' Comment: The plans do not describe how their objectives and strategies are reflective of and integrated with the water quality management plan and Total Maximum Daily Load schedule, except for the Wind subbasin.</p> <p>Wind: The plan generally describes how the objectives and strategies are reflective of and integrated with the water quality management plan and</p>	No	3

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).

Total Maximum Daily Load schedule		
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? ⁹		
<p>Reviewers' General Comment: In general, the focus of this plan is on the ESA. The adequacy of this, however, is variable across subbasins. For example, in the Little White Salmon subbasin it is not clear that the hatchery focus is consistent with management for ESA listed chum or tule fall Chinook. There is little language on timing or size of hatchery releases.</p> <p>Little White: This part of the plan is not clear at all. The planners offer some general statements about incidental harvest of weak stocks and the need to mark all hatchery fish for selective fisheries, but aside from that there is no discussion of how the Little White Salmon fits into ESA recovery planning.</p> <p>Wind: It is not clear whether the introduced populations of Chinook, coho, and chum salmon figure strongly in the ESA recovery plans for these species.</p>	Yes	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' General Comment: The plans describe some alternative strategies and disagreements. The tribes have no formal role in the plan development process but apparently are consulted. The plan only makes reference to CRITFC, though, and not the Washington State coastal tribes.	na	na

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

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.

<p>Reviewers' General Comment: The Provincial Plan gives strategies for the entire region in Volume one, and these are only summarized in tables in the subbasin plan.</p> <p>Little White: The plan addresses the needs of the lower river, but is very weak in assessing the needs of the upstream parts of the subbasin.</p>	Partial	3
<p>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)</p>		
<p>Reviewers' General Comment: The plans are narrowly focused on anadromous recovery, and while they indicate that programs that are good for anadromous fish will be good for the ecosystem in general, they do not develop many strategies that are specifically focused on any aspect of the subbasin other than anadromous fish.</p> <p>Little White: The plan is so overwhelmingly slanted toward continuing hatchery production, that it does not adequately address the various conservation elements of the Fish and Wildlife Program.</p> <p>Wind: The heavy emphasis on habitat restoration is consistent with the Fish and Wildlife Program.</p>	Yes	2
<p>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</p>		
<p>Reviewers' General Comment: The extent to which alternative management plans are considered is variable across the subbasins. On the provincial level, alternative recovery plans are considered. Ease of recovery is identified based on a qualitative comparison of constraints, costs, and opportunities associated among populations. This involved a collaborative process in a series of Scenario Evaluation Team (SET) workshops.</p>	Partial	2
<p>III.C.4. Prioritization. Does the Strategies Section describe a proposed sequence and prioritization of strategies?</p>		
<p>Reviewers' General Comment: The extent to which strategies are prioritized is variable across subbasins. The Wind contains more detail than some of the other subbasin sections. On the regional level prioritization is not done, and is needed. The list of proposed projects is very long, and it does not provide a framework for allocating research funds to the most needed activities.</p> <p>Little White: Priorities are not given.</p> <p>Wind: This plan did a generally adequate job of setting priorities. Table</p>	Partial	3

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

17.6 is clear.		
III.C.5. Additional Assessment Needs. Does the Strategies Section describe, if necessary, additional steps required to compile more complete or detailed assessment?		
Reviewers' General Comment: None of the plans detailed any additional assessment needs. If the planners feel that no additional needs are necessary they should provide a rationale for that assumption.	No	3
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' General Comment: For the most part the plans do not describe how the strategies are reflective of and integrated with the water quality management plan and Total Maximum Daily Load schedule. Wind: The plan addresses bringing some streams into compliance with 303d requirements.	Partial	3
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' General Comment: The plan is entirely based on ESA-listed anadromous fish. ESA-based efforts are well covered in the LCRP Provincial Plan. The subbasin plans, however, do not cover ESA-based efforts. Little White: Other than identifying the need for some protection for the few Chinook and (possibly) chum that spawn in the lower river, there are no statements about how the target production of hatchery smolts will affect ESA-listed stocks. Wind: The subbasin plan did not include a clear discussion of how the hatchery fish figure into ESA recovery. Bull trout, if they exist in the Wind, are not addressed.	Yes	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 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?	(Y)es, (P)artial, (N)o	<i>Need for additional treatment (0-4)</i>
Reviewers' General Comment: An RME plan is not developed for the individual subbasins. In addition, the Provincial Plan does not include a section that takes advantage of potential research opportunities among basins. The research plan should be tied back to the key uncertainties. The Provisional Plan is a guideline for developing an RME program, but is not a plan in itself. Regarding index sites, the ISRP has been advocating the use of EMAP and random sampling. The RME plan is a wish list at the provincial level; there is nothing at the subbasin level. There should be a RME plan developed specifically for each of these subbasins.		Partial	3
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' General Comment: There is no RME plan specific to each subbasin plan. There is a general RME strategy in the provincial management program.		Partial	3
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' General Comment: There is no RME plan specific to each subbasin plan. There is a general RME strategy in the provincial management program.		Partial	3
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' General Note: The LCRP Provincial Plan does describe a data and information archive, but this is not mentioned in any of the subbasin plans.		Partial	2
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' General Comment: No additional reviewer comment.		Partial	3

III.D.6	<p>Summary Question. RME Logic Path (Evaluation and Adaptive Management): Does the subbasin plan provide a scientifically supportable procedure for refining the biological objectives as new information becomes available about how fish, wildlife, and the environment interact, and in relationship to how the plans are implemented over time? (Council Question 7) Specifically, does the RME subsection describe a scientifically sound logic path for how to test if the subbasin plan’s strategies are helping to reach the stated vision and objectives? I.e., Is the RME agenda adequately framed around the relationships between the assessment data and the stated vision, biological objectives, and strategies in describing uncertainties?</p>		Partial	3
	<p>Overall impression and evaluation of the Management Plan: As needed elaborate on your evaluation of the various Sections enumerated above. If the plan provides additional analysis beyond what is laid out above in the checklist please comment here (e.g., socio-economic descriptions or analysis).</p>			
	<p>Reviewers’ General Comment: To make their plan more effective and useful the planners should apply their regional plan specifically to each subbasin.</p> <p>The plans include good economic information by county that is taken from information developed for the recovery plan.</p> <p>The Management Plan should have biological objectives, strategies and RME sections that are logically related and coherent and tied specifically to needs and conditions in the subbasin.</p> <p>The Management Plans require drawing heavily on the LCRP Provincial Plan to form complete subbasin plans. The RME sections are lacking in the individual subbasin plans and the RME guide referred to in the Provincial Plan is a general guide, and is thus inadequate as a stand in for a specific RME plan for each subbasin. Management Plans for wildlife should also be developed.</p> <p>There is no RME section in the plans. The plans end with the Inventory section, which ends with “Program Gap Analysis.” Volume One of the Provincial Plans has some guidelines for RME plans, but they are too vague to be directly useful in each subbasin. The guidelines refer to stratified random sampling designs but give no specifics and refer subsequently to Index Sites, whose appropriateness is questionable in an RME program.</p> <p>The planners have compiled a lot of information on the subbasins, but the subbasin plans need more synthesis and integration of the data.</p>	Partial	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 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’ General Comment: The planners approach is consistent with the Council’s eight principles, but their plans do not meet the broad mandates of a subbasin plan because they are more narrowly constructed as a salmon recovery plan. The plans need to be better organized, according to the Council subbasin plan format, and broadened to be an ecosystem-based subbasin plan.</p> <p>This is not a subbasin plan as envisioned by the Fish and Wildlife Plan. This is a recovery plan for listed anadromous species. The wildlife component is nearly entirely missing. Wildlife are not included as focal species. The planners should have picked a focal wildlife habitat such as Late Seral Forest. It may be the part of the basin that is most heavily impacted by the loss of old growth forest. Including habitats like Late Seral forest are an integral part of making the subbasin plans pertinent to an entire ecosystem. The planners have demonstrated that the hydrosystem impacts on wildlife in this area may not be substantial, but the ISRP/ISAB/PRG has been reviewing plans as ecosystem plans that included wildlife, upland terrestrial processes, etc.</p> <p>The document would be more useful had the subbasins been presented in a self-contained manner; for instance, the Cowlitz would be better if it is not partitioned out into different parts. Overall, the organization of the documents is such that they will be difficult to use for implementation. The Provincial Context provided a hopeful opportunity for adaptive management. Volume One of the LCRP set up a good approach at the provincial level, but the planners did not follow that approach through to</p>	<p>Partial</p>	<p>3</p>
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the subbasin level.

Overall, the plan has a lot of good information, but it is scattered around and not pulled together in a single subbasin plan. There is a logic behind the format of the plan as specified by the NPCC, and the documents should be formatted to conform to this outline.

The premise of the plan is that it serves as a recovery plan for Washington Lower Columbia salmon and steelhead populations while also satisfying the requirements of the Northwest Power and Conservation Council Fish and Wildlife Plan for a subbasin plan for eight full and three partial lower Columbia subbasins. It does the former but not the latter. Whether the approach the planners have taken is adequate for the purpose of amending into the Fish and Wildlife Program is a question for the Council.

Kalama: The Kalama subbasin plan is not at variance with the Council's eight principles, but the Council's eight principles also do not explicitly motivate it. Rather, the plan is an assessment of stream habitat for salmon in the subbasin and an indication of which areas would best benefit from protection and restoration.

Little White: The Little White Salmon Subbasin Plan is not very ecological and therefore it does not successfully adhere to the Council's eight principles described above. The authors simply assume that the subbasin exists to provide hatchery Chinook and coho salmon for harvest. There was little substantive discussion of watershed restoration beyond what had already been identified in existing watershed analyses. Wildlife are ignored. The importance of the upper subbasin as a cultural subsistence area used for hunting and berry picking by some American Indian tribes is ignored. There is no mention of controlling non-native fish species such as brook trout, which are abundant in streams and lakes in the Indian Heaven Wilderness and other headwater areas, and which have surely impacted the native amphibian fauna. The whole plan is too salmon-centric.

Wind: There are definitely some good sections in the Wind Subbasin Plan. The location-specific restoration options were clear (Table 17.6) and the emphasis on passive riparian restoration is welcome. Other parts of the plan, however, are confusing. The planners are taking a subbasin that is historically a steelhead-only system and are trying to crank out everything but sockeye. Maybe the planners are okay with this objective, but it definitely moves the subbasin away from its original state. Also, the plan does not address how the large quantity of sediment behind Hemlock Dam should be managed if the dam is removed. Sediment has been identified as a limiting factor downstream (reviewers think it will pass through the Wind River canyon quickly and settle in the lower river). Reviewers are unable to locate the RME section and was thus unable to evaluate how well the plan applies adaptive management principles. Upon

examining The Wind Subbasin plan with other reviewers, it was found that the Wind used the LCRP Provincial Plan's RME strategy. Like all of the other subbasins in this suite, the Wind subbasin would benefit from a RME plan that is specifically germane to its unique characteristics.		
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