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FY2002 Blue Mountain and Mountain Snake Provincial Review: Part II

Lower Snake River Compensation Plan
Preliminary Proposal Review

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Preliminary Proposal Review

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The Review Process

The Lower Snake River Compensation Plan (LSRCP) is a complex program to compensate for losses of fish in the Columbia and Snake Rivers due to construction and operation of the hydroelectric system. The LSRCP oversees operation and maintenance expenses for ten hatcheries and sixteen satellite facilities. The projects include adult trapping and juvenile acclimation and release facilities on/or for the lower Snake, Salmon, Clearwater, Walla Walla, Grande Ronde, Imnaha, Tucannon, Touchet, and Walla Walla subbasins. The program was initiated in response to the Water Resources Development Act of 1976, Public Law (P.L.) 94-587, which Congress adopted to mitigate and compensate for fish and wildlife resource losses caused by the construction and operation of the four federal dams in the lower Snake River -- Ice Harbor (1961), Lower Monumental (1969), Little Goose (1970), and Lower Granite (1975) dams. The fisheries mitigation provisions of the act have evolved into a highly complex program involving several co-managers.

In 1998, the U.S. Congress' Senate-House conference report on the fiscal year 1999 Energy and Water Development Appropriations bill directed the ISRP to annually review all fish and wildlife projects, programs, or measures included in federal agency budgets that are reimbursed by Bonneville. The LSRCP is a major component of this portion of Bonneville's program and, thus, is subject to review by the ISRP to determine whether LSRCP proposals are consistent with the criteria specified for direct program projects in the 1996 amendment.

In April 1999, the ISRP completed its first "Reimbursable" review, which was limited to a description of the program elements and recommendations to reschedule and improve the review for the next year (see www.nwcouncil.org/library/isrp/isrp99-1.htm). This review responds to many of the recommendations raised by the ISRP in its first report. For example, the LSRCP submitted proposal forms consistent with those submitted for Fish and Wildlife Program solicitations, the ISRP review criteria is the same as used for the provincial review, and the review was staggered and incorporated with the provincial reviews. In addition, the LSRCP proponents participated in the provincial review workshop, attending the site visits and providing presentations. This was a good step in presenting at least a subset of the multitude of salmon recovery effort in one venue for the benefit of the reviewers and the project sponsors.

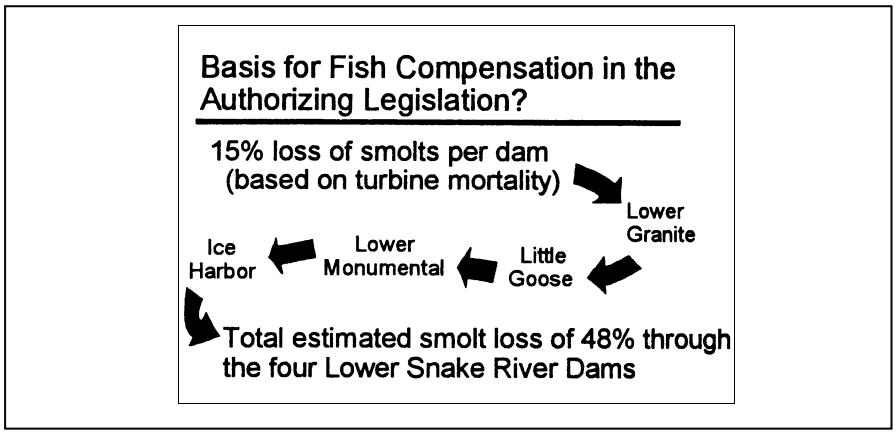
In the spring of 2001, six LSRCP proposals were submitted for review in the Columbia Plateau Provincial Review. These Washington Department of Fish and Wildlife (WDFW) proposals covered LSRCP activities in the Tucannon and Walla Walla subbasins and at Lyons Ferry Hatchery. The ISRP released a preliminary review of those projects on July 13, 2001. The ISRP's preliminary recommendation on the proposals was "fundable if additional information is provided that adequately addresses the ISRP's comments." The LSRCP provided responses to the ISRP concerns. The ISRP's comments on those responses are provided below. The ISRP defers its final recommendation on the Columbia Plateau Province proposals until completion of the entire LSRCP review.

In July of 2001, 20 more LSRCP proposals were submitted for review in the Blue Mountain and Mountain Snake provincial reviews. Due to time constraints and the complexity of the program, the ISRP was unable to review these on the same schedule as other proposals in those provinces; consequently, this report constitutes the ISRP's preliminary review. The LSRCP project sponsors and other interested parties have until January 24, 2002 to respond to the ISRP's preliminary comments. Please provide comments to Kendra Phillips by January 24, 2001; kphillips@nwppc.org; (503) 222-5161. The ISRP will consider the responses and issue a final report on the entire LSRCP by February 22, 2002.

LSRCP Production Targets

The LSRCP is built around production targets, which were derived from estimates of losses in anadromous fish production as a result of the construction and operation of the Lower Snake River hydrosystem facilities. The basis for the LSRCP production targets was an estimated turbine mortality of 15% of the emigrating smolts at each of the four Lower Snake dams (Figure 1). The cumulative losses were estimated to be 48% of the pre-dam Snake River chinook salmon and steelhead runs (Table 1). The LSRCP called for the construction of hatcheries to produce sufficient juveniles to compensate for that loss. Compensation focused on replacing adult spring/summer and fall chinook and summer steelhead. However, there were other anadromous species (coho and sockeye) still returning to the basin at the time of dam construction.[1] Congress authorized the U.S. Army Corps of Engineers to construct the facilities, Bonneville to repay the treasury for the cost of the program from revenues generated by power sales, and the USFWS or NMFS to administer the program.

Figure 1. Order of smolt losses at the four lower Snake River dams.



[1] It is worth noting today more than twenty years later that coho salmon went extinct in the Snake River basin in the early 1980s, and sockeye salmon were listed as endangered under the ESA in 1991. An expensive rescue effort focusing on captive brood technology has kept Snake Basin from virtual extinction, but perhaps not functional extinction. The extent of adult sockeye returns, if any, over the next few years to the Snake basin will probably indicate the ultimate fate of that program.

Table 1. Computation of adult anadromous fish losses associated with the four Lower Snake River dams and locks. (Source: Corps of Engineers 1975)

	Fall Chinook	Spring/Summer Chinook	Steelhead trout
Estimated Snake River run	32,663	122,200	114,800
Adult losses attributed to the Lower Snake Projects[2]	**18,300[3]**	**58,700**	**55,100**

[2] Estimated Snake River run times 48% (total estimated turbine-related losses).
[3]For fall chinook, formula for adult loss calculation is (Snake R. run minus 5,000 adults) * 48% plus 5,000 adults. The 5,000 adults is credited for those that spawned in the reach inundated by the reservoirs – that loss was direct and therefore added in directly to compute the total loss.

The plan also calls for resident trout production to compensate for the loss of angler days when the dams inundated about 140 miles of spawning habitat. In addition to the adult return goals identified in the compensation plan, the LSRCP also has responsibilities to comply with the ESA and to meet tribal trust responsibilities. Under the ESA, LSRCP actions are not to jeopardize listed species. Fish hatchery production has been adjusted where appropriate to meet ESA requirements.

According to the compensation plan, the LSRCP will continue efforts to maintain non-listed chinook salmon, steelhead, and rainbow trout programs under Section 7 of the ESA for future compensation options. However, as endemic stocks are developed, many of the program's non-local stocks will likely be phased out and replaced with local populations.

Prior to the current review process involving the ISRP, the LSRCP conducted its own internal programmatic reviews, the first in 1990 (Herrig 1990) after roughly a decade of operation, and a second larger in-depth review by the USFWS in 1998 (Herrig 1998). During that symposium, LSRCP-funded fisheries scientists summarized and addressed the status of their projects dealing with steelhead, spring and summer chinook, and fall chinook. Two panels, one of seven independent scientists and another of seven stakeholders, provided comments throughout and at the end of the review.

In most years, the LSRCP Hatchery Program and the LSRCP mitigation efforts have not been able to meet their goals, including adult returns above Lower Granite Dam, the numbers of adults needed for broodstock collection, and juvenile production targets. Thus, at a programmatic level, the LSRCP has failed to compensate for the losses of habitat and anadromous production caused by construction and operation of the Lower Snake river dams.

The original goal of the LSRCP was to compensate for the loss of 48% of the juveniles migrating downstream through the system; the other 52% of the run was expected to be maintained with the mitigation modifications such as installation of turbine intake screens, flip-lip spillway construction at the dams, barging/trucking smolts, and habitat improvement work. Based on the

1998 Status Review assessments, participants concluded that neither the (compensated) hatchery, nor the naturally spawning chinook populations have done as well as expected. Many of the chinook programs are no longer production-oriented programs as envisioned in the authorizing legislation, but rather are supplementation-oriented programs, due to the depressed status of the donor stocks. Steelhead (compensated) hatchery populations have done quite well in a number of years, whereas the naturally spawning populations have deteriorated to the point that all endemic populations in the Snake River basin are now listed under the ESA. The returns remain well below pre-dam levels.

Given the ESA status of Snake River basin anadromous stocks, and the increasing focus of this region's artificial production activities on supplementation and conservation issues, a question arises about the present day applicability of the original authorizing legislation for the LSRCP. The original directives do not seem as relevant today given these constraints, as they were likely viewed in the early 1980s. Whether the mismatch between the original authorizing language and the tasks that the Lower Snake River Compensation Program faces today creates an obstacle to the program's ability to address present concerns is not known by the ISRP, however this may be a question that is worth investigating at a policy level.

General Findings of the ISRP review

A major concern for these programs is the difficulty in assessing numerous proposals, objectives, and agencies involved in the lower Snake geographic region. The fragmentation of proposals, responsibilities, and monies leaves a strong sense of uncertainty that the sum of these fragments is a sound scientific program and one that we can learn from. The set of proposals submitted leaves the onus on the reviewers to make this assessment where the responsibility should certainly be on the program proponents to demonstrate this. The problem stems from major programs (ESA, LSRCP, FWP) and multiple agencies, with both common and singular interests, proposing a multitude of projects … that sum to a very large cost. Our sense after these reviews is that there is lots of opportunity for redundancy (how much money is being provided for coordination alone?) and inefficiency. After all these reviews, the ISRP is uncertain that the proposals constitute a comprehensive and sufficient program, that standardized procedures and data protocols are being applied, and that the appropriate analyses are being conducted and reported. The latter is the only true means to test that the data is adequate and/or that an issue has not been overlooked.

A more programmatic review of this region may be the only means to really review whether a sound scientific program underlies all this work and is appropriate for the funds being provided from several sources. Again, these proposals frequently refer to experimental management, but there is no indication of what the experiments are or decisions to be made depending on outcomes. It simply refers to trial and error again. True adaptive management requires a defined experimental framework and testable hypotheses, which were not evident in the proposals.

Multiple Mandates

In the Columbia Plateau response, WDFW states "… we intend to maintain the hatchery mitigation program and its resulting fisheries as congressionally mandated under the LSRCP." The mitigation, the ISRP review, the FWP, and the ESA are all congressionally mandated, and it is not clear that program elements from one should preclude efforts to meet the others. It is also important for the technical credibility of the Columbia Basin overall program to ensure that

hatchery based program goals are not at cross-purposes with goals of other programs. Many relevant issues are being addressed in the Lower Snake River Compensation Program reviewed here, but strict adherence to the original compensation goals may conflict with requirements of the Endangered Species Act, and wild fish protection goals. For example, the original authorizing LSRCP mandate does not provide a mechanism to factor in the current ecological (freshwater and marine) and economic conditions.

Program Success To Date

At a program level, the LSRCP mitigation efforts have not been able to meet their goals to compensate for the losses of habitat and anadromous production caused by construction and operation of the Lower Snake river dams, which the program has freely acknowledged in its own internal reviews (Herrig 1990; 1998). The program has fallen short in most years for adult returns above Lower Granite Dam, the numbers of adults needed for broodstock collection, and juvenile production targets. One of the conclusions from the from the 1998 USFWS Status Review Symposium of the LSRCP was that the program needed to rely on science-based management and adaptive management to be successful and that it was somewhat handicapped in doing this by the strong mitigation language in the original authorizing legislation.

Proposal Preparation and the ISRP Review Process

The Lower Snake River Compensation Program projects are relatively new to the BPA-Council-ISRP review process and many of the LSRCP project sponsors are finding the transition from their previous funding and review process a difficult one. CBFWA project sponsors had similar difficulties for the first several years with the review process and proposal preparation using the BPA-NPPC proposal format. However, CBFWA has been very proactive in educating and assisting its members toward preparing higher quality more informative proposals. The ISRP has noted and commented favorably on the increased quality of proposals during the provincial review process.

The BPA-Council proposal format calls for review information that provides biological descriptions and justification for program and project actions, in addition to statutory justification. Many of the LSRCP projects did not provide adequate biological descriptions and justifications, and relied too much on the LSRCP authorizing policy statements to justify their projects and actions.

Many of proposals were highly repetitive containing identical rationales, components, and so on. For much of the required information on the LSRCP proposal this was probably warranted and efficient. However, in some instances, the repetition appears to have been overdone so that it obscured individual characteristics of some of the projects, and more importantly, it may have prevented the careful thought that the personnel of individual projects should be applying to the purposes, planning, conduct, and evaluation of the work being done. The individuality of projects and of the people who conduct them is important for assessing prospects for success and should be more evident in the proposals.

Another general problem with the LSRCP proposals occurred in the section on project history. Many proposals merely referenced past reports without summarizing the content of those reports and adding pertinent information that may not yet have been formally published. Lacking information on project history, the proposals could not be adequately evaluated. Additionally, for many proposals, names of project personnel were listed, but their qualifications were not shown.

Stock Origin and Stock Transfers

Stock transfers have been discouraged as a management tool, yet an inter-basin transfer of Rapid River fish is practiced in this program. The Lower Snake River Compensation Program uses a mix of native and non-native broodstocks, the latter ranging from Lower Columbia River origin (Carson) spring chinook to nearly all of the steelhead stocks under culture through the program. With respect to the Rapid River spring chinook, other than as an available source of spawn to fill the hatchery capacity, how is the continued use of this non-native stock justified? The LSRCP steelhead stocks are native to the upper Snake River above Hells Canyon Dam, but are non-native with respect to the locations where they are outplanted in the Salmon and Clearwater systems. What effect does the use of a non-native stock have on success or failure of LSRCP projects?

The goals of rebuilding populations through stocking where wild broodstock are taken and returned at rates that have been, for the most part, below replacement, and stocking to provide recreational opportunity are contradictory to wild stock protection and restoration. All sources of mortality on wild stocks should be removed to attempt recruitment above replacement. One way to increase the science-based management of the LSRCP facilities and program as a whole would be to document the sources of wild fish mortality, measured or modeled, that arise from hatchery operations, including residualism, catch-and-release angling, reduction in reproductive success, or other. This could demonstrate the benefits of supplementation, if evidence of rebuilding was apparent.

LSRCP Monitoring and Database Issues

Finally, all LSRCP hatcheries need to provide evidence in their proposals that monitoring data are stored in an appropriate consistent database and are available through a distributed system via the Internet. The data and evaluation should be consistent with the Dworshak use of the Idaho FRO system (see Task 3.c in Proposal 200101) and any database in use by the Oregon Evaluation Studies (Proposal 200109). Results must be described in the proposal even if the data are collected and analyzed by a different project.

References

Herrig, D. 1990. A review of the Lower Snake River Compensation Plan Hatchery Program. U.S. Fish and Wildlife Service. Report, AFF1/LSR-90-06. Boise, Idaho.

Herrig, D, et al. 1998. Lower Snake River Compensation Program Status Review Symposium. U.S. Fish and Wildlife Service. Boise, Idaho.

LSRCP Columbia Plateau Proposals

The Columbia Plateau portion of the program, as presented to the ISRP, was described in three parts. The first part was for the overall program at Lyons Ferry; the second part described the Tucannon River portion of the program, and the third part described the Walla Walla River portion.

Lyons Ferry - Mainstem Snake

Project ID: 200121

Evaluation of salmonids released in the Snake River of Washington under the LSRCP Program
Target Species: Fall Chinook, Summer Steelhead
FY02 Request: $173,850
Short Description: Rear, release and evaluate fall chinook salmon and summer steelhead as part of the LSRCP mitigation program in a changing ESA environment.

Project ID: 200124

Lyons Ferry Complex (Lyons Ferry and Tucannon Hatchery) Operations and Maintenance
Target Species: Oncorhynchus mykiss, summer steelhead and resident rainbow trout, Oncoryhnchs tshawytscha, fall chinook
FY02 Request: $519,242
Short Description: Restore Snake River Fall Chinook and steelhead fisheries and populations through release of yearling and sub-yearling smolts produced at Lyons Ferry Hatchery and provide recreational opportunities for catchable rainbow trout.

These two proposals are for WDFW to continue operation of the Lyons Ferry Hatchery and associated monitoring and evaluation, as part of the LSCRP. The Lyons Ferry Hatchery serves as a central operational base for a complex of facilities, including the Tucannon Hatchery, and a system of acclimation ponds. Salmon and steelhead from individual parts of the complex are released into the Snake River proper, Tucannon River, and Walla Walla River (steelhead only).

The Plan is intended to produce 18,300 fall chinook salmon adults, 1152 Tucannon River spring chinook salmon adults, and 4656 summer steelhead adults back to the area of their release as smolts. An additional program goal is to produce and stock catchable sized fish to provide 67, 500 angler days of recreation.

Tucannon Hatchery

Project ID: 200123

LSRCP Tucannon River Spring Chinook/Summer Steelhead Production and Evaluation Program
Target Species: Spring Chinook Salmon, Summer Steelhead
FY02 Request: $201,260
Short Description: Rear, release and evaluate the spring chinook and summer steelhead LSRCP programs. Evaluate the effects of the programs on natural populations, and evaluate the development of a local origin wild steelhead broodstock for use in the program.

Project ID: 200125

Lyons Ferry Complex (Lyons Ferry and Tucannon Hatchery) Operations and Maintenance
Target Species: Oncorhynchus mykiss, summer steelhead and resident rainbow trout, Oncorhynchus tshawytscha, spring chinook
FY02 Request: $299,116
Short Description: Restore Tucannon River spring chinook and steelhead fisheries and populations through release of yearling smolts produced at Lyons Ferry Hatchery and provide recreational opportunities for catchable rainbow trout

Spring chinook salmon. Spring chinook salmon are produced in two programs for the Tucannon Basin: LSRCP supplementation, and a BPA funded captive brood stock project (Project # 200001900). Supplementation fish are produced by trapping about 100 adult spring chinook salmon from the Tucannon River at the Tucannon Fish Hatchery and hauling them to Lyons Ferry Hatchery where they are spawned and their progeny reared for one year. All fish are then marked and transported back to Tucannon Fish Hatchery for rearing and release.

The program includes monitoring and evaluation of adult run size to the Tucannon River, trapping and using only brood fish that will help maintain the genetic integrity of the population (excludes strays), estimating juvenile survivals by age-class, abundance of migrating smolts, smolt size, and comparative performance of supplementation production with captive broodstock production (BPA Project # 2000001900).

Fall chinook salmon – Monitoring of fall chinook salmon includes counts of adults in the Tucannon River. Carcass samples and coded-wire tags help to document the origin of spawners, and smolts are counted in the lower river.

Summer steelhead – The proposal reported that no numeric goals for returning adult summer steelhead were included in the LSCRP, but steelhead are reared and released in the Tucannon River to provide harvest opportunity. Later in the proposal, however, it was reported that the overall program attempts to return 4,656 steelhead adults to the Snake River in Washington.

Walla Walla

Project ID: 200122

LSRCP Walla Walla basin Summer Steelhead Evaluation Program
Sponsor: Washington Department of Fish and Wildlife
Province: Columbia Plateau
Subbasin: Walla Walla
Target Species: Spring Chinook Salmon, Summer Steelhead
FY02 Request: $98,490
Short Description: Evaluate the summer steelhead LSRCP program. Evaluate the effects of the programs on natural populations, and evaluate the development of a local origin wild steelhead broodstock for use in the program.

Project ID: 200126

Lyons Ferry Complex (Lyons Ferry and Tucannon Hatchery) Operations and Maintenance
Sponsor: Washington Department of Fish and Wildlife
Province: Columbia Plateau
Subbasin: Walla Walla
FY02 Request: $198,875
Target Species: Oncorhynchus mykiss, summer steelhead and resident rainbow trout
Short Description: Restore steelhead fisheries and populations through release of yearling smolts produced at Lyons Ferry Hatchery and provide recreational opportunities for catchable rainbow trout.

The Walla Walla portion of the program is a steelhead project. Goals include: 1) establishing brood stock(s); 2) maintaining and enhancing natural populations; 3) returning adults to the LSRCP area; and, 4) improving or re-establishing sport and tribal fisheries. Lyons Ferry Hatchery releases summer steelhead smolts into the Walla Walla and Touchet rivers. In regard to the goal to establish broodstock, the reviewers support the ongoing regional effort to ensure that only appropriate local stocks be used as hatchery brood fish.

ISRP Final Review Comments:

Defer final recommendation until review of the entire LSRCP is complete.

General Comments
The authors generally did a good job putting the material together describing, to the program's credit, a substantial commitment to monitoring program elements including hatchery practices, size and time at release, adult returns, smolt survival during migration, relative survival of hatchery and wild fish, and variability in brood stocks. Although the Tucannon and Walla Walla subbasin summaries contain some data on stock status, the summaries and proposals need to include detailed results concerning successes and failures in meeting the program's numerical goals. The proposals should include sufficient amounts of these data and analyses to stand on its own in a technical review.

Although most of responses adequately addressed the ISRP's concerns, some of the responses could have been more helpful. In several instances, for example, the respondents referred the ISRP to other documents or publications to search for the information needed to answer a question. In one instance, the authors did not produce the desired data because the information is to be included in a yet to be prepared publication. Presentation of these data to clarify an issue for the ISRP would not preclude publication at a later date.

In response to questions regarding the program's effectiveness in meeting the goals, the authors reported that the steelhead program sometimes exceeded the goal by as many as 10, 000 fish. When this happens wouldn't it be prudent to consider reducing the size of the program to prevent further jeopardy to wild fish? The respondent's did not make clear the program's effectiveness in meeting goals for chinook salmon.

Some estimates of harvest rate were presented in the response. Although rates for chinook (up to 6% for springs, up to 35% for falls) may be considered low, the impact of these rates on severely

depressed spring and fall chinook may be profound. Rates for steelhead were reported to be up to 50%.

Specific Comments
Additional review comments for consideration below are numbered according to their sequence in the WDFW response.

1. The ISRP asked whether monitoring of the trout sport fishery has been conducted to determine where it is with respect to the compensation goal. The WDFW response indicates that creel surveys of the steelhead fishery were conducted from 1984-1986 and resident trout in 1985. Goals for adult returns of steelhead have been met nearly every year. The creel surveys showed that the angler day goals for resident trout were exceeded during the survey year.

ISRP Final Comment: A lot of things can change in 15 years, especially considering one year as the index. The ISRP suggests that a periodic monitoring plan be developed that would identify any trends in angler participation over the years. Evidently, it is possible to estimate the numbers of adult steelhead returning annually. These numbers should be provided in future proposals. With respect to chinook, the response is adequate. Again, this information should be provided in future proposals.

2. The ISRP asked for a description of how past results have influenced project implementation. Have plans changed direction because monitoring trends show the need. In response to this request, WDFW provides a lengthy description of modifications that have been made in the details of the program.

ISRP Final Comment: The response was adequate.

3. The ISRP asked for information, where available, on the size of the 2001 spring chinook runs into the Tucannon and Walla Walla rivers as pertinent to the LSRCP performance.
In response WDFW provides a table showing numbers of spring chinook counted at several points during the years 1986 through 2000. They also conclude that the run in 2001 responded to ocean conditions in the same positive way as other stocks in the Snake and Columbia basins.

ISRP Final Comment: The response was adequate.

4. The ISRP raised a question about how these hatcheries are addressing the need for more information on rates of straying and the need to reduce it. The WDFW response describes several specific actions intended to assist in determining straying rates of steelhead released from these facilities. Coded wire tags are applied so as to identify each release group. Freeze brands are also used to identify release locations and groups. With spring chinook and effort is being made to ensure that all hatchery releases are marked so they can be distinguished from wild fish. All yearling fall chinook released from hatcheries are currently marked. Subyearling fall chinook are for the most part released above Lower Granite Dam by the Nez Perce tribe. It is expected that most will return to the Snake River basin, because they are acclimated prior to release.

ISRP Final Comment: The response was adequate, in that the requested information is provided. However, the information on fall chinook subyearlings is not reassuring, as suggested in a recent article by Kenaston, Lindsay, and Schroeder in the most recent North American Journal of

Fisheries Management (21:765-773), where steelhead that were acclimated showed no better return responses than fish that were not acclimated.

5. The ISRP asked what comparisons will be made in the evaluation of Curl Lake acclimation. The WDFW response indicates that in spite of the acclimation program, intended to shift spawning upstream, the concentration of redds has shifted downstream. Returns in 2001 may help clarify some of the questions regarding homing abilities and distribution of fish from Curl Lake. It is unlikely that studies will continue into the future, given management policies that are in effect.

ISRP Final Comment: The response was adequate. See the previous item 4.

6. The ISRP suggested that the results for the spring chinook captive brood stock program should be included in the same proposal as the LSRCP program. The WDFW indicates that there is little to report on the captive brood stock program. The first four-year old females will be spawned in the fall of 2001. Only after that would it be possible to compare the two programs.

ISRP Final Comment: The response was adequate.

7. The ISRP asked for a description of the exercise experiment that is proposed to determine whether exercise of juveniles prior to release will increase their rate of survival. The WDFW response describes an experiment involving two large rearing ponds. One group (control) will be reared using standard velocities (ca. 0.2 Body Lengths per second [BL/s]), while the exercised group will be submitted to various water velocities (in the range of 0.75 to 1.5 BL/s for 6 to 8 hours per day) five days a week until transfer to the Curl Lake Acclimation Pond. Velocities will be slowly increased each week by adjusting the angle of the water entering the pond. The target number for each group is in the range of 40,000 to 50,000 fish per brood year. Each group will be tagged with coded wire tags with a unique code. From each group another 500 fish will be marked with PIT tags before release into Curl Lake. ANOVA is proposed for the statistical analysis of differences in mean fish size, survival through the dams and survival to adult returns of spawners. The study is proposed to be published in a peer-reviewed journal.

ISRP Final Comment: There could be considerable saving in time and expense if a way could be found to provide replicate control and experimental groups within a year.

8. The ISRP asked for a description of methods used to monitor the results of planting salmon carcasses in streams to provide nutrients in an effort o increase productivity. The WDFW response suggests that the effort has been limited to placing in the stream carcasses of fish spawned in the hatchery. The program will depend upon studies elsewhere to apply to the LSRCP efforts.

ISRP Final Comment: The response was adequate.

9. The ISRP commented that the LSRCP goals include prevention of deleterious effects on naturally spawning stocks, but noticed little discussion of the option of discontinuing stocking of hatchery fish. WDFW responds that many modifications have been made in the program. They mention discontinuing stocking in Asotin Creek as one example, and reduction of numbers stocked in some streams. They are phasing into the use of local brood stock in two locations and are exploring a third. They have attempted to maintain stock integrity with the use of specific mating protocols.

ISRP Final Comment: The response was adequate.

10. The ISRP commented that there should be a discussion in the proposal of the factors and data that enter into the process of deciding how many fish to stock. WDFW provides a brief description of the CRFMP but recommended that the ISRP obtain additional information elsewhere. The CRFMP arose from the U.S. V Oregon court decision. The CRFMP process includes a Technical Advisory Committee, a Production Advisory Committee and a Policy Committee, each comprised of representatives of the parties to the suit. The intent of this plan is to provide management guidelines as well as hatchery production and harvest allocation requirements to ensure that Columbia River fisheries resources are protected, managed and enhanced for future generations, and to protect federally secured treaty tribal rights to their share of the harvestable fish. While the CRFMP has expired, a sequence of two-year agreements have been used that address hatchery production, fish marking and harvest levels and harvest sharing until such time as a revised CRFMP is completed and agreed to by the parties.

ISRP Final Comment: The response was adequate.

11. The ISRP (apparently) referred to Subobjective 7.2.1 concerning fall chinook adult return rates to SE Washington, and impacts from ocean and downriver fisheries and the use of CWT in this evaluation. The WDFW response states that all yearling fall chinook and some subyearlings produced by Lyons Ferry hatchery are marked with coded wire tags for evaluation of harvest, straying, and adult spawning escapement and hatchery returns. Ocean harvest has been and will continue to be included as part of the evaluation of success of the mitigation program. Periodically, all ocean and downriver harvests are examined and evaluated for their effect on meeting mitigation and recovery goals. Results are included in the annual monitoring and evaluation reports. Citation to a published report in which results are reported is provided (No. Amer. J. Fish. Mgmt. 17:638-651).

ISRP Final Comment: The response was adequate.

12. The ISRP inquired about monitoring for fall chinook adults and juveniles in the Tucannon River. The WDFW response says that redd counts are conduced annually in the lower Tucannon River. A table is provided. Carcasses have been examined, showing a hatchery origin (Lyons Ferry and Umatilla). A smolt trap operated on the lower Tucannon River has shown that natural production is highly variable, with counts between 100-15,000 smolts, while redd counts remained rather constant from year to year. They plan to publish the data in the near future. WDFW suspects that survival of juveniles in the river is variable because of due to channel instability and sediment input from Pataha Creek.

ISRP Final Comment: The response was adequate.

13. The ISRP said that the response should clarify the LSRCP goals for steelhead. The WDFW response specifies 4,656 hatchery produced steelhead adults per year and to maintain a substantial fishery in area streams. WDFW has separated the goal into subtotals for the watersheds 1,500 to the Grande Ronde, 875 to the Tucannon, 750 to the Touchet, 900 to the Walla Walla , and 631 to the Snake River.

ISRP Final Comment: The response was adequate.

14. The ISRP inquired whether the recreational fishery goal is being met, and asked what is the basis for stocking of brown trout? The WDFW response refers to the earlier question about monitoring of the recreational fishery (number 1). With respect to brown trout they accused the ISRP of not reading the full AOP plan, which shows that brown trout are no longer produced at any LFC facility. Production was discontinued following adoption of Washington's wild salmonid policy. The table the ISRP referred to was for design capacities for each hatchery for each species under the original LSRCP plan in which brown trout were identified as a mitigation for lost angler opportunity.

ISRP Final Comment: The response was adequate, though some note in the text would have been helpful in preventing the ISRP from having to infer this information from a comparison of a text that does not mention brown trout with a table that does.

15. The ISRP noted that the response should describe the option of phasing out unsuccessful activities, even the hatchery program altogether, at least for steelhead. The WDFW response is that many activities have been terminated or substantially modified. For example, resident trout are no longer planted into any area streams. All resident trout are now stocked in area ponds and lakes. A summary of planting records is attached to the response. WDFW feels it cannot terminate the hatchery program without congressional approval. Furthermore, WDFW feels that the program has been successful in supporting the hatchery produced resident trout and steelhead fisheries. The spring and fall chinook programs are currently geared toward restoring naturally spawning populations using local stocks. It is their hope to supply harvest opportunities and meet mitigation goals for fall chinook in the near future. They recognize that it may not be possible to maintain the Tucannon spring chinook stock or ever meet its mitigation goal.

They provide an analysis of potential effects of NMFS determination of jeopardy for LFH and Wallowa stock steelhead. There has been no guidance as to what level of hatchery production constitutes jeopardy. If relieved of the responsibility of mitigation under the LSRCP, other actions would have to be demonstrated to be successful and undertaken to compensate for the fish loss. They see no likelihood that other actions will be found in the near future that can substitute for the hatcheries.

ISRP Final Comment: The response was adequate.

16. The ISRP observed that the response should further describe the goal to establish hatchery brood stocks that are appropriate, local stocks. The WDFW response describes a process they are using to phase into local brood stock for steelhead in the Touchet River on a trial basis. They have concerns about "mining" the wild stock excessively; so have limited their initial target to

50,000 smolts from the wild stock and the remaining 75-100,000 smolts required using the Lyons Ferry Hatchery stock. Unknown return rates and straying rates of smolts originating from the wild stock also led to caution at this stage. Evaluation of performance of this brood stock will occur over the next five years before a decision is made that might commit the entire program to wild stock. With respect to the lower Walla Walla River, they are uncertain how to proceed. The status and identification of the steelhead stock is being studied to determine the best way to change to use of the local stock. Extent of straying of this stock is being studied as well. They have a concern that there may be more than one wild stock present in the basin, and do not want to undertake a program that might lead to their blending. Therefore, the Lyons Ferry stock will continue to be used in the lower Walla Walla River, evaluating the returns from that program and the wild steelhead stock status in the Touchet River, the upper Walla Walla River and Mill Creek.

ISRP Final Comment: The response was **inadequate**. See the ISRP general comment above on stock origin and transfer.

17. The ISRP asked for a description of the level of agreement among the CTUIR, the state of Washington and the state of Oregon. The WDFW response observes that the CTUIR would prefer that WDFW terminate the releases into the Walla Walla River of Lyons Ferry Hatchery stock steelhead and switch to a local stock. The state of Oregon has made no comment. WDFW will continue to study the alternatives and effects of this hatchery stock. With respect to the Touchet River, CTUIR has agreed with the WDFW plan for short term stocking goals over the next 4-5 years. CTUIR would prefer that over the long term WDFW would supplement the wild steelhead population for harvest mitigation rather than phasing into a local stock, due to concerns about straying. WDFW believes that the Touchet River stock is healthier than the Tucannon, where WDFW has already undertaken supplementation due to the depressed nature of the spring chinook and steelhead stocks there. They regard supplementation as experimental.

ISRP Final Comment: The response was adequate.

LSRCP Blue Mountain and Mountain Snake Proposals

Clearwater

Project ID: 200101

LSRCP Dworshak NFH spring chinook program
Sponsor: U.S. Fish and Wildlife Service
Province: Mountain Snake
Subbasin: Clearwater
Target Species: Clearwater River Spring Chinook Salmon
Short Description: Mitigate for lost spring chinook fisheries in the Clearwater River due to the construction of the four lower Snake River dams, also evaluate rearing, adult survival, fisheries contribution, and fish health for the production program.
ISRP Preliminary Review Comments:
A response is needed. While the program continues to fall short of it's own goal, having provided 9135 spring chinook adults to the project area above Lower Granite Dam (LSRCP mitigation goal) only two years out of 18, it has provided some measure of success in providing Tribal fisheries in 12 of the last 15 years and sport fisheries in 6 of those 15 years. Smolt release

goals were met in 11 of 20 years. The sponsors reported that for the first time, they met their goal of 9135 returning adults in 2000 and 2001.

Nevertheless, the proposal and response left the ISRP with several unresolved uncertainties that need to be addressed during the upcoming funding cycle. For example, the project sponsors need to describe in more detail the database and data management system at the Idaho Fishery Resource Office (FRO). Is this system available to all LSRCP hatcheries, all Columbia Basin Hatcheries? What are the formulas and assumptions made in estimation of total adult returns? How are strays and locations of natural spawning estimated? How is the production of strays spawning naturally vs. wild fish spawning estimated? How are tribal, down-river, and in-river (above Lower Granite) harvest estimated and used in the reporting of LSRCP performance by facility? A close reading of the Dworshak proposal 200101 and the Clearwater proposal 200103 suggest that sponsors are not reporting returning adult numbers using the same criteria. There needs to be a uniform standard for reporting and sharing data among facilities.

Other comments:
The technical and/or scientific background of the proposal (Section B) contained material primarily on the statutory background of the program, but included little technical information and nothing on the scientific issues involved. Notably lacking was discussion of the ecosystems into which the hatchery-produced fish are released, the suitability of the hatchery fish for survival in those ecosystems, and genetic and ecological consequences of imposing the hatchery fish on other organisms in those ecosystems, particularly wild conspecifics and other closely related wild fishes.

The proposal revealed ongoing problems with bacterial kidney disease (BKD) in the hatchery. The disease was the key fish health issue in Clearwater spring chinook in the late 1980's and early 1990's. However, the proposal noted that application of certain practices has "effectively reduced the prevalence of BKD in Dworshak spring chinook," and that the staff is "able to manage around the ever-present disease." No data were presented on this pattern of disease prevalence or the efficacy of the new management actions.

Project ID: 200103

Lower Snake River Compensation Plan (LSRCP), Clearwater Fish Hatchery
Sponsor: Idaho Department of Fish and Game
Province: Mountain Snake
Subbasin: Clearwater
Target Species: Oncorhynchus tshawytscha, spring chinook salmon; Oncorhynchus mykiss, summer steelhead (steelhead)
Short Description: As part of the LSRCP, Clearwater Fish Hatchery's objective is to rear juvenile salmon and steelhead to meet the mitigation goals of 12,000 adult chinook salmon and 14,000 adult summer steelhead upstream of Lower Granite Dam.
ISRP Preliminary Review Comments:
A response is needed. This is an inadequate proposal that provides little technical information needed for review. It provides little summary information on the purpose and past performance of the hatchery program. Rather, it focuses almost entirely on matters within the confines of the hatchery, which has operated since 1992. The proposal fails to adequately discuss how the hatchery products enter into management strategy and does not indicate what the results have been in terms of fish populations and fisheries. Material in the section on objectives, tasks and methods is organized in those terms, and except for great detail on performance of techniques, are not presented. Qualifications of the project personnel are not shown.

This hatchery appears to be a failed project if the data shown in Appendix 1are taken as presented. Project sponsors need to clarify the data presented in Appendix 1. Are the adults trapped on the line associated with 1988 release, the return of the adults and jacks from the 1988 release? What part of the return came from the smolt release and what part from the pre-smolt release? Do the returns include fish captured in the fisheries? Are adults in the "trapped" column, marked fish from CFH releases?

The goal for this project is to return 12000 chinook and 14000 steelhead adults, and to provide compensation for lost resident spawning habitat. Releases of chinook salmon have been made since 1988 (Appendix 1) and in recent years have approached or exceeded 2 million producing a maximum return of 3,978 in 2001, but only 344 adults in 1999. Even in the best chinook year in recorded history, the return was far short of the project goal for chinook. The steelhead program is not productive. Release of steelhead smolts since 1993 in recent years has approximated ¾ million, but returns have been less that 25 adults in each of the last four return years. It is time to reconsider whether to continue this project or to divert the funds to other strategies for meeting the mitigation goals.

Stock transfers have been discouraged as a management tool, yet an inter-basin transfer of Rapid River fish is practiced in this program. Other than an available source of spawn to fill the hatchery capacity, how can this practice be justified?

What component of the project is supplementation (and how is this defined) and what component is harvest production? Sponsors need to identify the effort to each, and briefly describe M&E. The project does not meet its own broodstock requirements. When eggs from only IHNV-negative fish are accepted from DNFH, doesn't that amount to selective breeding, a practice that also has been discouraged in modern hatchery management methods?

Project ID: 200112

Lyons Ferry Complex (Lyons Ferry and Tucannon Hatchery) Operations and Maintenance
Sponsor: Washington Department of Fish and Wildlife
Province: Mountain Snake
Subbasin: Clearwater
Target Species: Oncorhynchus tshawytscha, fall chinook; Oncorhynchus mykiss (Kamploop) rainbow trout
Short Description: Restore Snake River Fall Chinook fisheries and populations through release of sub-yearling and yearling smolts produced at the Lyons Ferry Complex. Provide a trout fisheries through release of juvenile rainbow trout produced at the Lyons Ferry Complex
ISRP Preliminary Review Comments:
A response is needed. The proposal is more logically organized and is more thorough in terms of stating results, i.e., the project history section contains results than proposal 200103 and many other LSRCP proposals; however, it still suffers from extensive repetition of text from other LSRCP proposals. Many of the review comments from those proposals and the programmatic comments at the beginning of the LSRCP review section are pertinent to this proposal as well. More attention needs to be paid to reporting of past results, providing biological justification and ecological context for the projects proposed actions, and to the reporting and sharing of data.

Salmon River

Project ID: 200102

Production of Summer Steelhead at Hagerman National Fish Hatchery, Lower Snake River Compensation Plan
Sponsor: U.S. Fish and Wildlife Service, Lower Snake River Compensation Plan Office
Province: Mountain Snake
Subbasin: Salmon
Target Species: Summer Steelhead
Short Description: Mitigate for lost steelhead fisheries in the Salmon River due to the construction of the four Lower Snake River dams. Also evaluate rearing and fish health for the production program.
ISRP Preliminary Review Comments:
A response is needed. The sponsors did not provide information to show the success or failure of the program. The proposal should include enough data to show its success or failure. Instead, the project sponsors refer reviewers to IDFG reports. While it is appropriate to reference critical reports, their results need to be summarized and included in the proposal.

The stated goal of the program is to release 1,360,000 smolts to return 13,600 adult steelhead to the basin upstream from Lower Granite Dam. The project history contains data indicating that the goal for steelhead smolt release was met in 12 of the 18 years since 1984. However, *no results on the more important goal of the adult return are presented*. The M&E objective 1, task 2 mentions collection of data on adult contribution to fisheries, but does not seem to consider also *total* adult return. How many adult steelhead does the program return to that area? The Brood Year Reports should also include estimates of numbers and locations of strays that spawn naturally.

Portions of the proposal seemed confusing to reviewers. The program exists as a mitigation program, but R&D projects are part of the request and history. Initiation of projects mentioned such as the heritability of spawn time, and factors influencing precocity have been subjects of research programs in other locations (ODFW, for example). Were results of this research considered before these projects were initiated? Why was it necessary to repeat much of this work?

Hatcheries should not be funded to develop their own databases, but rather, all LSRCP hatcheries need to provide evidence in their proposals that monitoring data are stored in an appropriate consistent database and are available through a distributed system via the Internet. The data and evaluation should be consistent with the Dworshak use of the Idaho FRO system (see Task 3.c in Proposal 200101) and any database in use by the Oregon Evaluation Studies (#200109). Results must be described in the proposal even if the data are collected and analyzed by a different project.

Project ID: 200104

Lower Snake River Compensation Plan (LSRCP), Magic Valley Fish Hatchery
Sponsor: Idaho Department of Fish and Game
Province: Mountain Snake
Subbasin: Salmon
Target Species: Oncorhynchus mykiss, summer steelhead
Short Description: As part of the LSRCP, Magic Valley Fish Hatchery's objective is to rear juvenile summer steelhead (steelhead) to meet the mitigation goal of 11,660 adult steelhead upstream of Lower Granite Dam.
ISRP Preliminary Review Comments:
A response is needed. Inadequate proposal. Many of the comments on Project 200103 pertain also to this one. The proposal focuses mainly on matters within the hatchery. It has apparently operated more or less in present form since the mid 1980s. The proposal should include more discussion on how the hatchery products enter into management strategy. It fails to indicate what the results have been in terms of fish populations and fisheries.

The abstract fails to give enough overview. It states neither the specific problems the hatchery is intended to remedy nor the results in trying to do so. The abstract indicates that the hatchery's LSRP mitigation goal an adult return of 11,660 steelhead upstream of Lower Granite Dam. To what extent has this goal been met?

The project history should answer that question but does not. It merely refers to two reports, and these were not provided to the reviewers. There is an appendix table containing numbers of smolts released, but the proposal contains no discussion of its meaning. The hatchery production goals (smolts to be produced) are not stated, so it cannot even be seen whether in-hatchery goals are being met.

The technical and/or scientific background in Section B contains inadequate information on the scientific issues involved. Notably lacking is discussion of the ecosystems into which the hatchery-produced fish will be released, the suitability of the hatchery fish for survival in those ecosystems, and genetic and ecological consequences of imposing the hatchery fish on other organisms in those ecosystems, particularly wild conspecifics and other closely related wild fishes. One aspect of this is mentioned, namely, that "Releases for selective fishery utilization are purposely segregated from key natural steelhead spawning and rearing areas," and this could be expanded upon by stating reasons, etc.

Material in the section on objectives, tasks and methods is organized in those terms, and except for great detail on performance of techniques, are not presented. Qualifications of the project personnel are not shown.

Project ID: 200105

Lower Snake River Compensation Plan (LSRCP), McCall Fish Hatchery
Sponsor: Idaho Department of Fish and Game
Province: Mountain Snake
Subbasin: Salmon
Target Species: Oncorhynchus tshawytscha, summer chinook salmon
Short Description: As part of the LSRCP, McCall Fish Hatchery's objective is to rear juvenile summer chinook salmon to meet the mitigation goal of 8,000 adult salmon upstream of Lower Granite Dam.
ISRP Preliminary Review Comments:
A response is needed. Do not provide funds for unspecified research. Many of the comments on Project 200103 pertain also to this one. The project continuation proposal reports "The LSRCP adult goal of 8000 adults upstream of Lower Granite Dam has rarely been achieved." The data included show the goal can be attained with the quality of smolts produced given satisfactory conditions in the migration route and ocean.

Proposed objective 5 (page 4) is to "Implement research programs at the hatchery to improve adult returns." There is no proposal(s) describing this research, or the need for additional research.

The technical and/or scientific background in Section B contains material primarily on statutory background of the program. It contains inadequate information on the scientific issues involved. Notably lacking is discussion of the ecosystems into which the hatchery-produced fish will be released, the suitability of the hatchery fish for survival in those ecosystems, and genetic and ecological consequences of imposing the hatchery fish on other organisms in those ecosystems, particularly wild conspecifics and other closely related wild fishes.

The adult mitigation goal is "8,000 adult summer chinook salmon upstream of Lower Granite Dam," and the direct hatchery production goal is to rear "*up to* 1,000,000 summer chinook smolts for release into the upper South Fork Salmon River" (italics added). The proposal gives no indication of the extent to which the adult return goal is being met. The production figure of "up to" a million chinook smolts is a pliable goal statement; literally, it says the program will try to produce anything between zero and a million.

There is an appendix table containing numbers of smolts released, but the proposal contains no discussion of its meaning. If the hatchery production goal is actually 1,000,000 smolts stated, then this has been met in only 7 of the hatchery's 20 years of operation. Smolt production exceeded 900,000 in only 11 years.

The project history merely refers to two reports, and these were not provided to the reviewers. The section on objectives lists objectives but does not list or explain tasks and methods. Qualifications of the project personnel are not shown.

Project ID: 200106

Lower Snake River Compensation Plan (LSRCP), Sawtooth Fish Hatchery
Sponsor: Idaho Department of Fish and Game
Province: Mountain Snake
Subbasin: Salmon
Target Species: Oncorhynchus tshawytscha, spring chinook; Oncorhynchus mykiss, summer steelhead
Short Description: As part of the LSRCP, Sawtooth Fish Hatchery's objective is to rear juvenile spring chinook salmon to meet the mitigation goal of 19,000 adult salmon upstream of Lower Granite Dam, and to provide summer steelhead eggs to other LSRCP hatcheries.
ISRP Preliminary Review Comments:
A response is needed. Do not provide funds for unspecified research. Many of the comments on Project 200103 pertain also to this one.

The project goal of 19,000 adult spring chinook salmon upstream of Lower Granite Dam has never been achieved; hatchery returns have never been even 2000 fish. The part of the overall LSCRP goal for production of steelhead adults from Sawtooth Hatchery was not specified in the proposal. Project results were provided in Appendix 1, but the presentation is not clear. The presentation should make clear the release and returns for each brood, by age class and by year. It appears the adult return is the count at the Sawtooth and East Fork racks. Are data available to estimate how many of each species was harvested? As it stands, the spring chinook salmon goal (19,000) remains far in excess of any return, even the 2001 return. Numerical goals, and release and return data (including any harvest data) need to be presented in enough detail (more than is presented in Appendix 1) to answer the previous questions and to permit assessment of how well the program is or is not meeting its goals.

Proposed objective 5 (page 4) is to "Implement research programs at the hatchery to improve salmon and steelhead returns to the hatchery." There is no proposal(s) describing this research, or to show a need for additional research.

Project ID: 200119

LSRCP Fish Hatchery Monitoring and Evaluation - Idaho
Sponsor: Idaho Department of Fish and Game
Province: Mountain Snake
Subbasin: Salmon
Target Species: spring/summer chinook salmon, summer steelhead
Short Description: Monitor and evaluate Idaho's Lower Snake River Compensation Plan hatchery program.
ISRP Preliminary Review Comments:
A response is needed. Do not provide funds for unspecified research. Many of the comments on Project 200103 pertain also to this one.

The technical and/or scientific background in Section B contains material primarily on statutory background of the program. It contains inadequate information on the scientific issues involved. Notably lacking is discussion of the ecosystems into which the hatchery-produced fish will be released, the suitability of the hatchery fish for survival in those ecosystems, and genetic and ecological consequences of imposing the hatchery fish on other organisms in those ecosystems, particularly wild conspecifics and other closely related wild fishes.

The project history lists past activities. It should also summarize the results of those activities regarding the fishes (and fishing) involved. The material on objectives and tasks is well done but could be more specific with regard to methods.

Project ID: 200108

Nez Perce Tribe Lower Snake River Compensation Plan Hatchery Evaluation
Sponsor: Nez Perce Tribe
Province: Mountain Snake
Subbasin: Salmon
Target Species: chinook salmon, steelhead
Short Description: Quantifies natural and hatchery adult salmon relative abundance, age and sex composition and dispersion of hatchery salmon in natural production areas, genetic profile within the SFSR metapopulation, and gene conservation (cryopreservation).
ISRP Preliminary Review Comments:
A response is needed. Sponsors did a reasonable job at putting this large, complex, and important M&E task to paper – well written, with thorough reference list (mainly grey literature). As large as the proposal is, it needs more detail on present results and trends. Insights on evolutionary implications are included in this proposal far more than in most others. The section on objectives, tasks, and methods seems thorough, and limitations seem to be properly recognized. Their task should also include publication – begin with entering the key questions (testable hypotheses) and findings into the proposal.

Assurance should be given that monitoring of natural production is consistent with future plans of project No. 199107300, "Idaho Natural Production Monitoring and Evaluation" in the Mt. Snake Province.

The background information provided in the proposal is telling in that it comes close to suggesting that extinction will result despite numerous gallant efforts, including supplementation. It is subtly suggested that freshwater habitat may be as productive as possible. Thus, either harvest or other sources of mortality (dams?) must be addressed. The region will continue to ponder these policy decisions, but meanwhile must support projects such as this, if they assist evaluation and monitoring.

Objectives of the proposal are to coordinate and participate in evaluation activities (conducted by others?), conduct spawning ground surveys, and cryopreservation. On the latter, it is difficult to imagine how this increases effective population size effectively, since it preserves only the male component. Thus, future population size will be limited by the availability of female spawners.

On coordination, the poor quality of hatchery proposals herein, compared to this submission, suggests that there is a need for more oversight and evaluation of other related projects. This area should receive the greatest emphasis within the proposal.

On page 3, they state that the project is intended to "monitor post-release aspects of LSRCP hatchery production performance, monitor natural production status and performance, evaluate interactions of hatchery and natural juveniles, promote genetic conservation, and to contribute to the co-management of the LSRCP program." What are the specific objectives for these performance objectives, how is the sampling program designed to detect differences among groups, and what are the end-points? What interactions between hatchery and natural fish are being investigated, how are they being evaluated, and what can you conclude? Evaluation of the

relative production from hatchery fish vs. wild fish that are spawning naturally together in the wild should also be an important focus of investigation of the study. What are the specific, quantitative objectives of the genetic conservation component and how will you know when you get there?

The Mt. Snake Project No. 198335003, "Nez Perce Tribal Hatchery Monitoring And Evaluation" for $1,884,430 is not mentioned in the proposal. We assume there are other projects in the Blue Mt. Province. The relationship of these projects should be explained and justified. Also, note

199703000	Chinook Salmon Adult Abundance Monitoring	Nez Perce Tribe/Pacific Northwest National Laboratory	Salmon	$1,033,000
199703800	Preserve Salmonid Gametes and Establish a Regional Salmonid Germplasm Repository	Nez Perce Tribe	Salmon	$1,279,000

This is not all of the projects. For the money being given by the Council and LSRCP, a better accounting should be given? This proposal is for $169,928, a relatively modest request.

Imnaha

Project ID: 200107

Nez Perce Tribe Lower Snake River Compensation Plan Hatchery Evaluation
Sponsor: Nez Perce Tribe
Province: Blue Mountain
Subbasin: Imnaha
Target Species: Chinook salmon, steelhead, natural and hatchery
Short Description: Determine post-release survival of hatchery chinook salmon smolts, smolt survival, emigration timing and travel time at Snake River dams, SAR of wild/natural chinook; determine adult steelhead spawner abundance; preserve genetic diversity (cryopreserve).
ISRP Preliminary Review Comments:
A response is needed. This is a well-prepared proposal that complements many of the Blue Mountain Province proposals reviewed. The proposal presents some data and graphics from past monitoring efforts, provides evidence of a good reporting record, and provides good rationale for the need for quantitative assessments, maintenance of life history diversity and the integration of supplementation programs that mimic this diversity. Further, there are comments regarding incorporating data into Regional data systems but it is not completely clear how much of this data is achieved. Reviewers have several minor comments and one major programmatic concern.

Minor issues:
1. Many of these assessments use PIT tags and large numbers of them, but is there a sampling design to justify these tag numbers and, if so, what is the confidence level that is desired? Are there specific hypotheses being tested with this tagging or is this just aimed at some level of precision in the estimator?
2. The proposal provides SAR's for the 1996 brood spring and fall chinook, which showed promising levels of return. However, there are no measures of variability about these estimates. What is the variability and how has it been estimated? This is an important issue for sampling designs and is a concern regarding the numbers of tags required to measure the SAR for steelhead given their multiple ages at emigration.

3. This is the first proposal to comment on how trap efficiency is measured for the Imnaha smolt trapping but there is no indication of the variability in these daily estimates and how it compares with the alternative model suggested.
4. The proposal refers to snorkel estimation of fish density along transects. Verification of such an estimation procedure seems necessary but there is no reference to this.

Project ID: 200111

Lower Snake River Fish and Wildlife Compensation Plan Hatcheries O&M
Sponsor: Oregon Dept. of Fish and Wildlife
Province: Blue Mountain
Subbasin: Imnaha
Target Species: Oncorhynchus tshawytscha (spring chinook)
Short Description: The goal of the LSRCP is to mitigate and compensate for fish resource losses caused by construction and operation of the four lower Snake River dams and navigation lock projects (FWS 2000).
ISRP Preliminary Review Comments:
Fundable. The proposal is well organized and integrated with other associated projects but this proposal only covers the operating expenses for facilities (operated by ODFW) associated with conventional production of spring chinook and steelhead in the Imnaha basin. The proposal presents a purely fish hatchery approach: so-called compensation rather than dealing with causative problems. There is no deviation from past cost estimates for these activities. The short description in Section 1 is inaccurate and should be corrected to be more descriptive of this actual proposal.

Grande Ronde

Project ID: 200109

Lower Snake River Compensation Plan--Oregon Evaluation Studies
Sponsor: Oregon Department of Fish and Wildlife
Province: Blue Mountain
Subbasin: Grande Ronde
Target Species: Chinook Salmon and Summer Steelhead
Short Description: This project provides information to assess the success of Oregon's LSRCP program in meeting management objectives. Studies focus on hatchery effectiveness, life history, supplementation, population status, and fisheries restoration.
ISRP Preliminary Review Comments:
A response is required. This is an important proposal that is integrated with several other projects in the Grande Ronde and Imnaha basins. The proposal is informative, provides a good historical overview of the stocks and programs, and has a good record of publications and accomplishments. However, given its importance there are several issues that need to be clarified.

1) Minam stock is identified as a control or wild stock but several comments made during the site visit question its suitability due to past habitat and stock impacts. What evidence is there that this is an adequate control or simply a system without hatchery releases?
2) page 6 of Section 9 states “We are continuing our efforts to monitor straying in to the Minam and Wenaha Rivers and determine annual escapement and broodyear specific productivity for

all major spawning populations in the basin." … paragraph refers to Grande Ronde basin chinook salmon. There are numerous questions generated by this statement: how are populations defined, how is productivity measured, how accurately can escapements be measured by age, sex, and population, etc.? These concerns are not subsequently addressed in the text.

3) page 16, Section 9 states "We have developed approaches that allow for accurate estimates of natural spawning escapements." What comparisons have been made to verify accuracy and what methods are used?
4) In the methods section, the investigators use LV clips that are known to reduce the survival of these animals. Why is this clip needed and what alternative were investigated?
5) Major concern … a major aspect of this proposal is the annual estimation of spawning escapements for spring chinook. The basis for these surveys needs to be more fully described including what quantitative methods (to derive accurate values noted above in point 3). In the absence of a consistent and quantitative method, reviewers do not see a basis for the statement made on page 16. Reviewers understanding of the escapement surveys is that a three-tiered survey is conducted: one is the historical index areas, second is the extensive surveys conducted simultaneously with the historical index; and third is the two supplemental surveys conducted after the previous two. But what method is actually used to determine the escapement … is it peak count during the surveys or a 'stream-life'-type calculation that uses the multiple surveys? Reviewers have serious concerns about the accuracy of any method that assumes they can identify the peak spawning time and only enumerate at that time.
6) In sub-objective 7.3, how are the biosamples collected in order to partition sexes and/or production to a brood year. Carcasses are seldom a good random sampling of the adult return in other chinook populations, what is the evidence that this is adequate in these populations.
7) Objective 8 seems to be identical to proposal 27024, is this true and if so, why?
8) Objective 10 refers to using Rapid River stock for re-introduction … is this still correct and, if so, why is this necessary if captive brood fish are available. The main spring chinook brood stocks in the Grande Ronde have been changed to be endemic, why should a different stock be allowed in Lookingglass Creek?
9) The numbering of objectives is not consistent with the numbering in the budget summary? This should be corrected to facilitate understanding of associated costs.

There are so many interdependencies between proposals in these basins, these agencies might be advised to establish critical linkages and prioritize these in case funds are not sufficient. A matrix presentation of proposals and keys information ties would greatly facilitate understanding of these linkages.

We recommend not funding the hatchery monitoring component until evidence is given that monitoring data are stored in an appropriate consistent database for all LSRCP hatcheries and are available through a distributed system via the Internet. The data and evaluation should be consistent with the Dworshak use of the Idaho FRO system (see Task 3.c in Proposal 200101). Results must be given in the proposal even if analyzed by a different project. Given the amount of data and metadata collected, there must be a database in use by this project, but we did not see a description of the database or associated costs.

Similarly, do not fund the natural production component unless there are plans to begin implementing the "Oregon Plan." Traditional and new sites selected under the Oregon Plan should both be surveyed for a few years. This is a large complex M&E program for Oregon LSRCP hatcheries and natural production. It is not clear that the monitoring for natural production is being conducted according to the Oregon Plan. We anticipate that it is not. If we are correct, the proponents should begin to move from the use of index sites and the associated

extended sites to a probabilistic selection of monitoring sites that is consistent with the Oregon DF&W and DEA proposals in the Columbia Plateau for the Deschutes, John Day, Walla Walla and Umatilla (see the ISRP reviews and responses in the Columbia Plateau Province). The Oregon LSRCP M&E program should begin working with the other Provinces to develop common probabilistic sampling plans, common data collection protocols and common databases.

Project ID: 200110

Lower Snake River Fish and Wildlife Compensation Plan
Sponsor: Oregon Dept. of Fish and Wildlife
Province: Blue Mountain
Subbasin: Grande Ronde
Target Species: Oncorhynchus mykiss (summer steelhead), Oncorhynchus tshawytscha (spring chinook)
Short Description: The goal of the LSRCP is to mitigate and compensate for fish resource losses caused by construction and operation of the four lower Snake River dams and navigation lock projects (FWS 2000).
ISRP Preliminary Review Comments:
Fundable. The proposal is well organized and integrated with other associated projects but this proposal only covers the operating expenses for facilities (operated by ODFW) associated with conventional production of spring chinook and steelhead in the Imnaha basin. The proposal presents a purely fish hatchery approach: so-called compensation rather than dealing with causative problems. There is no deviation from past cost estimates for these activities. The short description in Section 1 is inaccurate and should be corrected to be more descriptive of this actual proposal.

Since this proposal only addresses facility operating expenses, it may not be appropriate to comment on data and data management. However, there is a general need for data to be stored in an appropriate consistent database for all LSRCP hatcheries and are available through a distributed system via the Internet. Data available from these programs must be made available for assessments and progress towards project goals. The data and evaluation should be consistent with the Dworshak use of the Idaho FRO system (see Task 3.c in Proposal 200101) and any database in use by the Oregon Evaluation Studies (#200109). Results must be given in the proposal even if collected and analyzed by a different project. In particular, results for returning adults, straying rates, and reproduction of strays that spawn naturally should be given.

Project ID: 200113

Lyons Ferry Complex (Lyons Ferry and Tucannon Hatchery) Operations and Maintenance
Sponsor: Washington Department of Fish and Wildlife
Province: Blue Mountain
Subbasin: Grande Ronde
Target Species: Oncorhynchus mykiss, summer steelhead
Short Description: Restore steelhead fisheries and populations through release of yearling smolts produced at Lyons Ferry Hatchery
ISRP Preliminary Review Comments:
See ISRP review of other Grande Ronde LSRCP projects and comments in Columbia Plateau section above for the Lyons Ferry projects.

Project ID: 200117

LSRCP Grande Ronde River Summer Steelhead and Fall Chinook Production and Evaluation Program
Sponsor: Washington Department of Fish and Wildlife
Province: Blue Mountain
Subbasin: Grande Ronde
Target Species: Summer steelhead and fall chinook salmon (future)
Short Description: Monitor releases of hatchery steelhead mitigation fish in the Grande Ronde. Recommend hatchery related actions, which may aid recovery of ESA listed populations.
ISRP Preliminary Review Comments:
A response is required. The budget is apparently for one FTE at $42,800K to participate in a broad LSRCP M&E program, but it is unclear how this project is integrated with other evaluation projects.

This proposal has been largely extracted from the proposal for Projects 200118, 200112, 200114, 200115 (or the other way around). In general, the way the proposal is written detracts from the project clarity. It is far too long for the content involved (needless words, among other problems), and is full of organizational lapses (though most headings remain). Trying to find why and how the project is being done and what its results are takes far more effort than it should. Therefore, many comments below deal with the proposal rather than the project itself. It was helpful to have in-hatchery (production) details relegated to an appendix.

Section b: Technical and/or scientific background shows disregard for this subject area. The material focuses on statutory underpinnings and program process, gives little hint of technical matters, and has nothing whatsoever about scientific basis for the program. The message this section conveys is that the sponsors view the program as neither needing scientific justification nor having science behind what is being done. Hunting through the rest of the proposal reveals that this does not adequately characterize the sponsors' view, but the writers got the proposal off to a poor start by misconstruing Section b. Furthermore, no primary scientific literature is referenced anywhere in the proposal. Only gray literature was used, and one of those sources shown in the text, Martin (2000), does not appear among the proposal's listed references.

The proposal fails to refer to the significant body of published research findings on steelhead residualization and the effects of it. It does not even refer to WDFW's own long-standing and well-known research on relative reproductive performance of wild and hatchery steelhead and the resulting threat to natural productivity, e.g., the papers of Chilcote, Leider, and others from the Kalama River. It also ignores such pertinent papers as Reisenbichler and McIntyre (1977) and Reisenbichler et al. (1992). Below are examples of references that project personnel should consult for possible inclusion (and as starting points for finding others) with thorough discussion in a revised proposal:

Chilcote, M. W., S. A. Leider, and J. J. Loch. 1986. Differential reproductive success of hatchery and wild summer-run steelhead under natural conditions. Transactions of the American Fisheries Society 115:726-735.

Reisenbichler, R. R. 1997. Genetic factors contributing to declines of anadromous salmonids in the Pacific Northwest. Pages 223-244 *in* D. J. Stouder, P. A. Bisson, and R. J. Naiman, eds. Pacific salmon and their ecosystems: status and future options. Chapman & Hall, New York.

Reisenbichler, R. R., and J. D. McIntyre. 1977. Genetic differences in growth and survival of juvenile hatchery and wild steelhead trout, *Salmo gairdneri*. J. Fish. Res. Bd. Canada 34:123-128.

Reisenbichler, R. R., J. D. McIntyre, M. F. Solazzi, and S. W. Ladino. 1992. Genetic variation in steelhead of Oregon and northern California. Trans. Am. Fish. Soc. 121:158-169.

Reisenbichler, R. R., and S. R. Phelps. 1989. Genetic variation in steelhead (*Salmo gairdneri*) from the north coast of Washington. Can. J. Fish. Aquat. Sci. 46:66-73.

Section c: **Rationale and significance to Regional Programs** contains a welter of material concerning rationale: various forms of statement on goals, objectives, plans, identified needs, and visions—by at least eight agencies and tribes. This could have been boiled down to something more coherent but is generally good stuff. It gives helpful context within which to consider the target fishes, fall chinook salmon and summer steelhead, and the management for them. (The project's actual, narrow, technical concept and operation, or aspects of these, may not fit in with some of the stated, ecologically based visions and goals). Then, for each of the two fishes, there is a summary of past hatchery program intents, efforts, and results, as well as future "possibility." Embedded in Section c are indications of some technical aspects and underlying science that could have been covered (with much else) in Section b. Most of the material on past effort and results belongs in Section e, Project history. (If writers do not follow the organization stipulated for proposals, it becomes confusing and inefficient for reviewers to ferret out what they are trying to say.)

The following quotation brings up useful questions: "The existence of LSRCP hatchery mitigation within the Grande Ronde basin . . . continues to raise questions: what are the effects on listed species of continuing the hatchery steelhead program, should new broodstocks be developed for the program to reduce the potential for negative impacts of hatchery production and serve as a more appropriate source of supplementation fish, and are wild populations within the basin healthy enough to be used for broodstock development without serious damage? Answers to these questions must be obtained and integrated into existing management documents if managers are to make informed decisions that benefit natural populations." The proposal should indicate the progress made toward getting the answers and what the results have been so far.

Section e: **Project history** merely lists various activities, some oddly presented as task statements. It fails to show here what the results were, but, as said, some were shown in a previous section. Except for one unquantified statement, the "Past Accomplishments" are expressed not as what was accomplished, but as activities performed; mere activities are not meaningful accomplishments. The one statement of a result was that the project "provides an excellent steelhead sport fishery in the lower Grande Ronde River which has exceeded the original LSRCP mitigation goals." It was previously stated that LSRCP's "specific mitigation goals include 'in-place' and 'in-kind' replacement of adult salmon and steelhead," and that the project is intended to "rear and release juvenile fish to compensate for . . . [among other things,] . . . 4,656 Snake River summer steelhead. . ." An objective is later stated of meeting an "LSRCP goal to return an average of 1,250 adult hatchery steelhead to the Lower Grande Ronde River annually for harvest." It is not clear how the figure of 4,656 was reduced to 1,250. The estimated sport fishery harvests of the hatchery's fish were estimated to range from 1,291 to 3,520 during the nine angling seasons from 1991-1992 to 1999-2000. These estimated harvests exceed the LSRCP harvest goal of 1,250 but fall short of the 4,656 that are supposed to be compensated for. What is the explanation to this?

Section f: Objectives, tasks and methods. This is the good part. There are better indications of what the project is about. The opening paragraph indicates that the objectives and tasks that apply to this project were pulled from an overall document on the LSRCP program. The narrative material may represent direct input by project personnel. The scheme looks adequate. The project history section should, by summarizing results, show the extent to which the work is being done and is effective.

Most of these comments likely pertain to the proposals that material has been extracted from, but this proposal must be substantially clarified.

Project ID: 200118

Evaluation of salmonids released in the Snake River under the LSRCP Program
Sponsor: Washington Department of Fish and Wildlife
Province: Blue Mountain
Subbasin: Snake Hells Canyon
Target Species: Fall chinook salmon
Summer steelhead
Short Description: Evaluate fall chinook production and releases into the Snake River basin above Lower Granite Dam, and document harvest / return of hatchery reared steelhead produced as part of the LSRCP program.
ISRP Preliminary Review Comments:
A response is required. This project is part of a set of projects 200118, 200112, 200114, and 200115: Production and evaluation of salmonids released in the Snake River of Washington under the Lower Snake River Compensation Plan (LSRCP) Program. The proposal is mostly for personal costs for participation in evaluation studies and for minor components of the PIT and DNA sampling costs (details were not provided for a capital request of $25K). This proposal is integrated with a larger evaluation proposal submitted by the Nez Perce (project #199801004). These proposals constitute the core assessment of this production.

The proposal lists objectives and tasks in section 9f but the methods are very limited in description and require clarification.

As with many of other LSRCP proposals, we recommend not funding the hatchery monitoring component until evidence is given that monitoring data are stored in an appropriate consistent database for all LSRCP hatcheries and are available through a distributed system via the Internet. The data and evaluation should be consistent with the Dworshak use of the Idaho FRO system (see Task 3.c in Proposal 200101). Results must be given in the proposal even if analyzed by a different project. Given the amount of data and metadata collected, there must be a database in use by this project, but we did not see a description of the database or associated costs.

Project ID: 200120

Reintroduction evaluation of spring chinook salmon and the study of the early life history of summer steelhead in Lookingglass Creek
Sponsor: Confederated Tribes of the Umatilla Indian Reservation
Province: Blue Mountain
Subbasin: Grande Ronde
Target Species: Spring Chinook Salmon, Summer Steelhead
Short Description: Monitor and evaluate survival and life history characteristics of spring chinook salmon and O. mykiss in Lookingglass Creek
ISRP Preliminary Review Comments:
Do not fund, response required. While this is quite a comprehensive proposal and can be rationalized against Regional programs, reviewers question the current necessity for this detailed program. Three issues suggest the need to review this program:

- improvements to the Lookingglass Hatchery water supply have not been agreed upon or costs approved at this time;
- uncertainty about the wisdom of outplanting into the habitat without careful consideration of experiments that could be conducted in this unique environmental situation (this point is even referred to by the authors in point 2, page 4 of Section 9); and
- whether there is simply the need to conduct such a detailed investigation for another production objective.

The project should be reduced to reasonable scope, focusing on a single, clear purpose, and then be written up in a much more concise proposal. A suggestion may be for the proponents to proceed with a substantially reduced program until the hatchery up-grade is complete, and until a careful consideration of alternative uses of the habitat is complete. We recognize that this may lead to a temporary deferment of production or fishery objectives but the benefits of using such a controlled environment for critical research issues (such as about the efficacy of re-introduction methods) may out-weigh these shorter-term production goals. These options should be discussed amongst co-managers before this proposal proceeds further.

Snake Hells Canyon

Project ID: 200115

Lyons Ferry Complex (Lyons Ferry and Tucannon Hatchery) Operations and Maintenance
Sponsor: Washington Department of Fish and Wildlife
Province: Blue Mountain
Subbasin: Snake Hells Canyon
Target Species: Oncorhynchus mykiss, summer steelhead
Short Description: Restore fall chinook and resident trout fisheries and populations through release of yearling smolts produced at Lyons Ferry Hatchery
ISRP Preliminary Review Comments:
A response is required. This proposal is mostly material shared with projects #200117 and #200113 (or the other way around); so most comments on them could apply in part to this proposal also. This project's potential responders are referred to those comments. However, this proposal seems to have some of its material more logically organized and is more thorough in terms of stating results, i.e., the project history section contains results. The proposal is largely for operating expenses associated with the Lyons Ferry complex hatcheries but also includes some funds for marking and evaluation. Project sponsors should respond to comments on any of these projects in one collated and integrated response.

Asotin

Project ID: 200116

Monitor and Evaluate Salmonid Production in the Asotin Creek Subbasin of Washington
Sponsor: Washington Department of Fish and Wildlife
Province: Blue Mountain
Subbasin: Asotin
Target Species: Summer steelhead and spring chinook salmon
Short Description: Monitor the status of salmonid populations within the Asotin subbasin in the absence of hatchery supplementation. Recommend hatchery related actions, which may aid recovery of ESA listed populations.
ISRP Preliminary Review Comments:
Response required, but likely fundable. This is a relatively small ($30K/year) project to monitor wild steelhead and salmon production for comparison with hatchery-origin stream production elsewhere, and to help assess effects of habitat restoration. The tour in August indicated that steelhead have been the focus to date but chinook spawning was occurring in 2001. The tour also showed reviewers that this project is linked to a very active and apparently extremely successful habitat restoration program. This proposal provides an interesting history and many of the goals and objectives are supportable, but there are no methods presented or examination of the data quality. How do we know that quantitative repeatable surveys are conducted and how are data quality assessed? While the project seems worthy of continued support, more information is needed regarding sampling site location for the program used to estimate juvenile salmonid population size. The sole use of index sites is not appropriate (refer to programmatic M&E comments and need to incorporate randomly selected sites).

The budget summary also generated some confusion. The FY2002 budget request is for $27,600 … but then the cost sharing summary quotes the same value. Is this an error of accounting or is that actually a 1:1 cost sharing ratio? Further, given the tasks described, what are the funds actually requested for? The amount requested seems inadequate to do very much.