# Appendix B. Technical Responses to the ISRP Comments

The following responses are provided in support of the CBFWA recommendations for FY 2000 funding in the DAIWP originally submitted to the Council April 16, 1999.

Subregional teams met and discussed the ISRP comments for each project and determined the most appropriate means of responding. Tier 1 and Tier 2 project sponsors were then asked to provide responses to the ISRP technical comments regarding their proposals. These responses were reviewed by the subregional teams and the appropriate caucus and modified to obtain consensus support. The consensus version was then incorporated into this Appendix. The original responses are on file at CBFWA offices in Portland, Oregon.

Several responses were provided for Tier 3 projects, which were inconsistent with the CBFWA recommendations. This information is not included in this document and is also on file at the CBFWA offices in Portland, Oregon.

Responses are listed by Project ID, as shown in the following table of contents.

# Table of Contents

**Project: 20013 Restore Unobstructed Fish Passage To Duncan Creek**
Sponsor: Skamania Landing Owners Association (SLOA)

CBFWA tier: 3
ISRP review: Fund for one year as proposed.

ISRP Comments/Question: Fund for one year as proposed.

Response: It should be noted that the Duncan Creek project is currently funded for FY2000 by the Lower Columbia Fish Recovery Board, although additional support will likely be needed. Many inaccuracies within the proposal were overlooked by the ISRP (i.e., level of support by USFWS). The responsibility of Bonneville Power Administration for this project is questionable. The proposers wish to establish fish passage past a structure that was built by the homeowners in this area after the hydro-system was in operation.

ISRP Comments/Question: The project needs a more clearly defined protocol for monitoring spawning activity and reporting of results (approved by WDFW). Authors should include some estimate of anticipated results. They should also discuss habitat criteria more explicitly (what other conditions are necessary in the Duncan Creek watershed to support anadromous fish?) and explain plans to evaluate results beyond the fact that spawning surveys are to be conducted annually.

Specific questions and comments that should also be addressed are:
There is no evidence of a watershed assessment plan. From what source will the stock for chum salmon come? Is spawning habitat the only limiting factor for chum? And is the estuary adequate to support juvenile chum? The cost-sharing budget figure (Page 4) appears to be incorrect.

Response: These specific concerns raised by the ISRP were also considered by CBFWA, which is precisely the reason the project was given a poor ranking among the projects proposed for this subbasin. This project did not meet the management priority threshold for the Lower Columbia Subbasin.

**Project: 20014 Evaluate Songbird Use Of Riparian Areas During Fall Migration**
Sponsor: Department of Biological Sciences, University of Idaho

CBFWA tier: 3
ISRP review: Fund (innovative for the FWP, medium priority)

ISRP Comment/Question: Fund (innovative for the FWP, medium priority)

Response: Based upon a review of this project using Wildlife Caucus research criteria, this project did not identify a specific need under the Council's Program nor did it satisfy any identified data gap for continued implementation of ongoing mitigation projects.

**Project: 20016 Snake River Steelhead Hooking Mortality Study**
Sponsor: Washington Department of Fish and Wildlife

CBFWA tier: 2
ISRP review: Do not fund. The study design is not scientifically adequate, and would not result in useful information.

ISRP Comment/Question: The approach would be to collect, via hook and line, 50 adult steelhead in the Grande Ronde River, which then would be radio tagged. The proposed methodology has critical deficiencies. For example, is the proposed sample of 50 fish enough to make credible conclusions?

Response: Assessments of spawning distribution, pre-spawning mortality, and movement patterns of *O. mykiss* seldom utilize more than 50 fish, especially in small rivers. Radio tracking fish in the Grande Ronde River is highly effective because of its size (<50 m wide), lack of tributaries and general lack of hiding habitat.

ISRP Comment/Question: Second, reviewers questioned the assumption that radio tagging will not affect the survival of the sample fish, and this also becomes a problem of small sample statistics, which almost certainly will not provide precise results or endure statistical review.

Response: Post-tagging survival of adult steelhead trout is greater than 90% when properly tagged and w hen the fish is not in spawning condition. Tags will be utilized which are less than 3% of the body weight of the fish being tagged and tagging will occur in September, which is at least 6 months prior to spawning. Ten steelhead were radio tagged in the Touchet River in 1999 and documented zero mortalities. As part of the experimental design, a treatment-control group will be utilized to assess survival of tagged vs. untagged fish.

ISRP Comment/Question: Finally, the assumption that "Hooking mortality rates for adult hatchery summer steelhead are the same as for naturally produced adult summer steelhead …" seems very much open to question and was also questioned in the CBFWA evaluation.

Response: There are no data available to support this assumption but the project managers must ask why the reviewers would suspect that hooking mortalities would differ between adult hatchery and naturally produced steelhead collected at the same time under identical environmental conditions.

ISRP Comment: This proposal poses significant cost and effort to indirectly assess mortality by radio tracking and by releasing hatchery fish into a pond after capture.

Response: This is a true treatment-control experimental design in which fish will be hooked, played to exhaustion, radio tagged and then released (treatment group) into a pond for monitoring. The control group will also be hooked and played to exhaustion, but not radio tagged, and then released into the same pond. This design will make it possible to determine if mortality is independent of radio tagging.

ISRP Comment: A significantly scaled-down project to play a small number of fish at 70 degrees and hold them at an established operating hatchery might be worthwhile if there is supporting evidence that there is a problem with the 1,000 – odd fish caught in September in the Tucannon and Grande Ronde.

Response: State, federal, and tribal agencies have asked the same question, which is why this research is being proposed. If it is assumed that hooking mortality is 10% at water temperatures above 70ºF., then the answer to this question must be yes, mortality of wild Snake River steelhead is a problem genetically, ecologically, socially and culturally.

ISRP Comment: The proposers neglected to reference several published studies that examined hooking mortality of steelhead, Atlantic salmon, and other species. Those studies (e.g., Reingold 1975 Trans Am Fish Soc; Pettit 1977 TAFS; Hooten 1987 Proc. Catch & Release Symposium, Arcata CA) documented a single capture mortality of about 5% and found no indication that catch-and-release affected fish behavior or homing.

Response: The project managers are not concerned about hooking mortality when water temperatures are cold and when the majority of fish being caught are of hatchery origin. Those studies examined hooking mortalities when environmental conditions were favorable to fish survival; the Snake River and its tributaries do not represent ideal environmental conditions when a large percentage of wild steelhead are present.

**Project: 20017 Restore Habitat Within Dredge Tailings On The Yankee Fork Salmon River**
Sponsor: Shoshone-Bannock Tribes, Idaho Department of Fish and Game, U.S. Forest Service

CBFWA tier: 1
ISRP review: Do not fund, technically inadequate

ISRP Comment/Question/Question: Do not fund, technically inadequate.

Response: Project 20017 was also submitted for funding in FY99 (Project No. 8021), was ranked as Tier 2 by CBFWA, and also found to be adequate by the ISRP review for FY1999. The sponsors realize that a more project-specific review was completed by the ISRP for FY2000; however, comments for FY2000 such as, "This appears to be a poorly conceived project with little chance of success," and, "Reviewers consider the proposal deficient in sound scientific principle and lacking in clearly defined objectives, particularly in advancing provisions for monitoring and evaluation," should have come up during the FY1999 ISRP review, even with a coarse review by the ISRP. Assuming that the proposal submitted for FY1999 was adequate, the sponsors submitted the same proposal (with modifications to address the Watershed Technical Review) for FY2000. How can the ISRP find a project technically inadequate for FY2000 when they found the same proposal adequate for FY1999?

The proposal reviewed by the ISRP is different from the one that was recommended for funding as a Tier 1 proposal by CBFWA for FY2000. The ISRP-reviewed proposal has a budget of over $200,000 and includes money for hiring a project manager, completing a small pilot project on USFS land, completing the Watershed Assessment, and completing the initial planning, feasibility study, remote sensing analysis, and stream channel design work. The proposal recommended for funding by CBFWA is for $65,000 and includes only the money necessary to complete the Watershed Assessment, initial planning, feasibility study, remote sensing analysis and stream channel design work. This amount will allow the project to complete Objective I and Objective VI of the proposal. No on-the-ground work will be accomplished until completion of the Watershed Assessment and feasibility study. The authors hope the following responses adequately address the concerns raised by the ISRP regarding this project.

ISRP Comment/Question: The proposal cites a six-mile stream segment on private land as the intended target area, but that is not entirely clear.

Response: The target area for this project is a six-mile segment of the Yankee Fork Salmon River, the majority of which lies on private land owned by the J.R. Simplot Company.

ISRP Comment/Question: The authors do not establish that this area is a critical bottleneck limiting production and therefore, that it deserves priority consideration.

Response: The project area affected by dredge mining in the Yankee Fork has in turn affected the entire drainage upstream and upslope from the disturbance. Much of the natural meander pattern of the stream and associated instream habitat and riparian vegetation have been lost, and extensive unconsolidated and unvegetated dredge tailings have increased sedimentation of spawning gravels and rearing pools and reduced riparian vegetation (Richards et al. 1989). By confining the stream to a channel bordered by tailings piles and the road, the main river channel has downcut, thus affecting the stability of the main river above this point as well as all the tributary streams entering the mainstem Yankee Fork for a considerable distance. Allowing the river to access its floodplain by bringing the mainstem Yankee Fork up to grade would have upstream and upslope benefits throughout the system. This project area has been identified as a priority for large-scale ecosystem restoration in the Upper Salmon subbasin assessment (Overton et al. in review (a)).

Potential smolt production is high in the Yankee Fork drainage. An estimated 425,000 chinook salmon smolts and 59,000 steelhead smolts could be produced (Kiefer et al. 1990). Allowing natural stream processes to occur, and thus forming a riffle-pool structure favorable to salmonid spawning and rearing, would increase production in the Yankee Fork system given abundant spawning adults. The Yankee Fork Salmon River has been designated critical habitat for Snake River chinook salmon and more than likely will be designated critical habitat for Snake River summer steelhead and bull trout as well. We believe that a project that addresses habitat restoration on designated critical habitat for listed stocks should receive priority consideration for funding.

ISRP Comment/Question: A project manager would be hired at a $50K salary.

Response: The original proposal reviewed by the ISRP did have this amount budgeted for a project manager as the intended person to hire would necessarily have a strong background in fluvial geomorphology, hydrology, fisheries biology, and heavy equipment construction. This item was not included in the $65,000 budget approved by CBFWA.

ISRP Comment/Question: An easement or land exchange with private landowners would be necessary but there is no further mention of interaction with the company.

Response: After successfully obtaining an easement with the J.R. Simplot Company, the project will not require further interaction with the Company. However, the project sponsors are optimistic that once funding is obtained, the J.R. Simplot Company would provide continued support (i.e., financial or in-kind).

ISRP Comment/Question: No cost sharing is shown although they list collaborators.

Response: With the original proposal, there was little actual cost-share, although the USFS, IDFG, and tribes have spent considerable time and effort to date in preliminary design and coordination for this project. The USFS cost-share also includes the Overton et al. (in review (b)), which fulfills approximately 75% of the requirements for a completed Watershed Assessment. The USFS is also spending approximately $12,000 this summer to complete the aerial videography for the project. Finally, foregone future use of the land through the easement with J.R. Simplot should be considered a major cost-share. Collaboration with local watershed groups, including landowners and private industries in the area, will provide the broad-based support necessary to successfully implement this project.

ISRP Comment/Question: This appears to be a poorly conceived project with little chance of success.

Response: The concept for this project is similar to the North Fork John Day (NFJD) River Dredge Tailings Restoration project, BPA Project No. 9605300. The NFJD restoration project restored channel structure to a pre-dredged condition at the project site following the redistribution of over 6,000 cubic yards of tailings. This allowed the North Fork John Day River access to the floodplain and allowed the water and energy to dissipate, thus emulating the natural condition of the river system. Chinook salmon utilized the newly redistributed substrate to construct redds within weeks after completion (McKinney and Calame 1994). Personnel from the NFJD project are being consulted and will provide valuable input to the Yankee Fork restoration effort so that similar results can be achieved.

ISRP Comment/Question: Alternative approaches and unwanted side-effects are not discussed and a monitoring and evaluation plan is not described.

Response: Few, if any, alternatives are available to restore the affected portion of the Yankee Fork Salmon River to a pre-dredged condition. The tailings piles and the road confine the river to a narrow channel with little or no active floodplain. Removal of the tailings piles and relocating the road are the only methods available to allow the river to once again access its floodplain and function properly.

A Watershed Assessment, most of which has been completed by Overton et al. (in review (b)), is scheduled to be completed during the first year of the project. This assessment will address unwanted side-effects, including short-term in-channel effects and water quality issues. Side-effects will also be addressed through the NEPA process and consultation.

An implementation and effectiveness monitoring plan is a major part of the Yankee Fork project. This plan will also be guided by the Watershed Assessment. Aerial videography and satellite imagery will be used to monitor riparian and upslope conditions throughout the Yankee Fork drainage, stream channel morphology will be monitored, and water quality parameters will be monitored to insure quality control throughout the life of the project.

ISRP Comment/Question: Reviewers consider the proposal deficient in sound scientific principle and lacking in clearly defined objectives, particularly in advancing provisions for monitoring and evaluation.

Response: An objective of this proposal is to develop cost-effective technical tools to assist in project design and monitoring. We propose to use large-scale videography in conjunction with GIS to assist in determining the current channel/riparian configuration. This spatial coverage, in conjunction with geomorphological modeling by a graduate student at the University of Idaho working with Dr. Peter Goodwin, would then be used to design the desired stream channel characteristics (i.e., channel shape and dimensions, floodplain, and riparian areas), and to monitor changes over time. Integrate satellite imagery will also be used to identify and assess key watershed areas effecting

ecological function (e.g., roads and slope stability) and to provide baseline data for the watershed for future monitoring. The refinement of these methods, as well as incorporating the tried-and-tested techniques from the North Fork John Day River project, could provide future techniques for cost-effective assessment, designs, and monitoring of similar watershed-stream restoration projects.

References:

Kiefer, S.A., P.K. Cowley, and M. Rowe. 1990. Salmon River subbasin plan. Final report to the Northwest Power Planning Council, Portland, Oregon.

McKinney, S.P., and E. Calame. 1994. North Fork John Day Dredge Tailing Restoration Project. Aqua-Talk, U. S. Forest Service R-6 Fish Habitat Relationship Technical Bulletin No. 5, Portland, Oregon.

Overton, C.K., R. Brannon, and J.S. Gebhards. In Review (a). Subbasin assessment and conservation restoration plan for chinook salmon and bull trout in the upper Salmon River subbasin, Idaho: An example. General Technical Report RMRS-XXX. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Boise, Idaho.

Overton, C.K., M.A. Radko, and R. Brannon. In Review (b). Watershed analysis approaches using chinook salmon, Yankee Fork of the Salmon River: An Example. General Technical Report RMRS-XXX. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Boise, Idaho.

Richards, C., P.J. Cernera, and J. M. Gunderman. 1989. Salmon River habitat enhancement. Shoshone-Bannock Tribes 1988 Annual Report, Bonneville Power Administration, Portland, Oregon.

**Project: 20018 Tucannon River and Asotin Creek Riparian Enhancement**
Sponsor: Washington Department of Fish and Wildlife

CBFWA tier: 2
ISRP review: Do not fund; encourage resubmission following comprehensive review of restoration programs within the Tucannon Basin, and demonstration of biological benefits.

ISRP Comment/Question: Do not fund; encourage resubmission following comprehensive review of restoration programs within the Tucannon basin, and demonstration of biological benefits. It badly needs a review to determine overall objectives, what measures are most appropriate to achieving them, and how funding should be allocated to assure the greatest return in terms of habitat. CBFWA's technical evaluation was that "The project proposes using BPA funds for private landowners wishing to avoid restrictive conditions associated with alternative funding sources (page 8).

Response: The project sponsor is a member of the Tucannon Model Watershed team and is intimately familiar with the restoration programs in the Tucannon Basin. The project proposal should contain a review of those efforts. Restoration efforts are currently funded by a myriad of sources through the Tucannon Model Watershed Plan, initially and currently funded by BPA, which emphasizes restoration efforts to address pool habitat, sedimentation and water temperature. The Tucannon Model Watershed Plan was written and is administered by the Columbia Conservation District that is controlled by a board of local landowners with input from technical and landowner committees. As a result, the majority of projects implemented are on private property and have a strong bank stabilization element included. As a technical member and co-author of the Plan, WDFW supports the majority of those instream projects; however, those projects fail to address water temperature from a larger, basin-wide scale. Biological benefits from the small-scale instream habitat projects currently being implemented will not be realized unless water temperatures decrease throughout the basin. The only way to decrease water temperature is to implement a large-scale re-vegetation effort at sites that are currently not being addresses by other funding sources. The desire of the project sponsor is to implement such an effort, not to avoid restrictive conditions associated with alternative funding sources, but to augment those efforts in areas that those funding sources are not being utilized.

ISRP Comment/Question: This project appears driven more by programmatic opportunities and constraints, than by scientific necessity.

Response: The issue of apparent lack of scientific necessity is perplexing. Water temperatures in the Snake River Basin have long been known to be a factor limiting salmon recovery. Other than large water storage reservoirs, there is no single action that can reduce tributary water temperatures greater than a healthy riparian zone. Funding agencies can continue funding instream habitat projects and large salmon supplementation projects indefinitely and never realize salmon recovery unless thermal factors are addressed. In virtually every tribal, federal and state salmon recovery plan water temperature is described as a factor limiting recovery. Although water temperature is not the only factor limiting recovery, it is programmatically the only factor not being addressed on a large scale. It is the managers' belief that a healthy riparian zone will have multiple benefits towards salmon recovery including long term woody debris recruitment which is necessary for natural pool development, reduction in sedimentation, bank stabilization and decreased water temperatures. It is truly in the public's best interest to implement this project because the dependency on funds for continued artificial pool construction, bank stabilization, and sedimentation containment structures will never end unless we "treat the problem, not the symptom."

**Project: 20021 Estimate natural steelhead production in two tributaries of the Walla Walla**
Sponsor: Washington Department of Fish and Wildlife

CBFWA tier: 2
ISRP review: Do not fund. Incorporate into project 9901100.

ISRP Comment/Question: If the region intends to proceed with construction of the hatchery and proceed with supplementation to lessen the risk of extinction, then this study is not needed.

Response: WDFW is presently involved in a mitigation program within the Walla Walla River as part of LSRCP; however, the decision to proceed with supplementation has not been fully supported by WDFW. WDFW believes that the Walla Walla basin populations may be above the replacement line during most years, with notable exception for some recent brood years where poor ocean and drought conditions seriously depressed the population. Washington's Wild Salmonid Policy requires all actions be taken to preserve wild populations before supplementation is adopted. A complete understanding of the ecology and productivity of Walla Walla populations is necessary before the decision to supplement is made.

ISRP Comment/Question: This project should be closely related to the other regional studies, with an expanded description of its relationship to the Lower Snake River Compensation Program and assurance of PIT tagging coordination with regional efforts.

Response: The Walla Walla study will be conducted by the same research group currently performing LSRCP hatchery evaluations. The WDFW has a coordinated management and research effort in SE Washington. Including this study with 9901100 as recommended, or including it under an umbrella, could be easily accommodated to ensure efficiencies of tasks and continuity of data collection and analysis. PIT tagging would be coordinated through WDFW and the other co-managers.

ISRP Comment/Question: Given the numbers of fish available, PIT tagging may not lead to the desired results.

Response: Given the unknown number of fish available for tagging as juveniles, the project managers believe that PIT tagging represents the best possible method to ensure statistically sound results. Coded-wire tags will be used as a backup tagging method to provide recoveries from outside the basin if wild fish are subjected to incidental harvest.

ISRP Comment/Question: Details of stock-recruitment analysis, brood tables and the connection to management are not clear.

Response: Unfortunately, little is known of the productivity and recruit relationships for the Walla Walla Basin. While growth rates and spawning escapement appear to be relatively high, the populations have experienced a downturn similar to that seen in other basins in recent years. The decision to supplement in a basin above only four

dams may be premature and unnecessary without further information with which to properly guide the decision of managers. Work completed under this study will be closely coordinated with LSRCP evaluations, thus providing proper guidance in proceeding with a federal mitigation program that must be consistent with ESA recovery goals.

**Project: 20022 NE Oregon Hatchery Planning & Coordination - WDFW**
Sponsor: Washington Department of Fish and Wildlife

CBFWA tier: 1
ISRP review: Do not fund. The project needs to be included in an Independent Programmatic Review of the Umatilla and Walla Walla hatchery programs.

ISRP Comment/Question: Do not fund. The project needs to be included in an Independent Programmatic Review of the Umatilla and Walla Walla hatchery programs.

Response: Funding should not be delayed while awaiting a further review of the hatchery programs. A programmatic review and site visit are encouraged by the managers; however, there is no reason to stop funding this project to complete that review. Funding should be provided with a condition that funding may be stopped in the future, following a comprehensive review of the program.

ISRP Comment/Question: Some proposals appear to be advanced more from an institutional desire to be engaged in the decision-making process than to meet a technical need. Decisions on funding therefore become policy matters. The ISRP can evaluate the technical adequacy of proposals, but the council needs to determine whether there are policy elements involved. This proposal seems motivated by an agency's wish to participate in a planning process where it has a legitimate and commendable role to play from a policy standpoint.

Response: This proposal reflects the WDFW's wish to be involved in Northeast Oregon Hatchery Planning (NEOH) process in the Walla Walla and Grande Ronde basins (not Umatilla as indicated in the ISRP recommendation) where WDFW has co-management responsibilities. The ISRP is correct: this is more a policy issue than a technical one. The ISRP comments are generally supportive of the WDFW's role and participation in the NEOH planning process; no technical concerns are raised by the reviewers.

ISRP Comment/Question: From a purely technical standpoint, this proposal would probably add a different perspective on the evaluation of need for hatcheries on the Walla Walla River. We also note that CBFWA itself proposes a general reduction in the intended scope of the project.

Response: WDFW agrees with the ISRP that WDFW participation may provide a different perspective on the need for hatcheries in the Walla Walla, and Grande Ronde basins. The WDFW volunteered the reduction in this proposal so the subregional team could meet its funding target, not as a reflection on the quality or scope of the proposal. The CBFWA subregional team proposed a reduction in the funding because of insufficient funds for all Tier 1 projects proposed for funding for NE Oregon/SE Washington.

**Project: 20023 Hanford Reach Steelhead Stock Investigation**
Sponsor: Washington Department of Fish and Wildlife

CBFWA tier: 1
ISRP review: Fund in part. Fund objectives 1-3, related to continuing observation of steelhead spawning (20%). Do not fund other activities until their feasibility is demonstrated.

ISRP Comment/Question: Further information on steelhead spawning in the mainstem would be useful. This proposal is based on an interesting set of observations, noting that these salmonid redds have appeared "intermittently" since 1962 at a time when they probably would be steelhead redds, though apparently no adults have been observed in association with them. Since they have occurred intermittently there is not assurance the phenomenon will occur in FY2000. While the phenomenon is interesting and of some importance from a

management standpoint, the funding agency must recognize and the investigators must acknowledge, that there is a likelihood there will be no possibility of a full study in FY2000.

A means needs to be found to proceed with the search for redds and to incorporate methods of establishing that they are or are not the result of steelhead activity, once redds are observed. This is a challenge for the investigators. In any case, if the interest is in identifying the origin of a stock, it will be necessary to describe the methods in much more detail than is provided. For example, a question immediately comes to mind about whether the necessary sample size can be collected.

Response: We generally agree with the ISRP comments and share some of their concerns.

Few spawning surveys have been directed at locating and enumerating steelhead redds in recent years, thus steelhead redds have been identified "intermittently" since 1962. No redds were found during seven aerial spawning surveys between April 2 and May 26, 1999. Those flights were conducted cooperatively between Pacific Northwest National Laboratory and Washington Department of Fish and Wildlife (WDFW). It is correct that there is no assurance that redds will be found in 2000; however, if spawning surveys are not conducted, it will not be known if redds are present. If no redds are located, very limited work to locate fry will be conducted.

The means of searching for redds is aircraft flights. A total of 10 aerial redd counts will occur once a week between April 5 and June 7. The survey area includes the section of the Columbia River between Wooded Island (rm 348) and Priest Rapids Dam (rm 397).

During the surveys, redd locations will be photographed and marked using a global positioning system (GPS). The information will then be recorded on a map of the survey area.

Crews will access spawning areas by jet-boat to ground truth the locations of redds to verify coordinates and determine elevations of specific redds within four days of the aerial survey. Redd location information will be collected from the aerial and ground surveys and transferred to a map of the Hanford Reach to show the distribution. Sites will then be established for collecting adults, egg/alevins, and fry based on the distribution of redds.

There are three planned approaches to collecting samples of adult and egg-fry steelhead: angling, redd sampling, and beach seining. Angling for adults occurs in April and May; redd sampling for egg/alevins occurs April through June; beach seining for fry occurs in June and July. The success of all these methods is highly dependent on river flows.

The WDFW staff will verify locations, and collect biological information from each adult steelhead sampled (i.e., fork length, scales, sex, external marks, genetic samples, and fish condition on release). The genetic samples consist of a 2 $cm^2$ piece of upper caudal fin. Genetic sampling guidelines are established by the WDFW Genetics Laboratory. All fish sampled will be released back into the river in the proximity of their capture.

High river flows and low numbers of spawning adult steelhead may make it difficult to collect sufficient numbers of egg/alevin and fry from the collection sites. Only one egg/alevin or fry is required to verify presence; however, it is assumed that a combination of 100 egg/alevin and fry are required to identify stock (S. Young, WDFW, Olympia, WA., personal communication, 1999).

WDFW field staff will collect samples of steelhead egg/alevins by excavating portions of redds made accessible (i.e., less and 2' deep) by low flow fluctuations. During an excavation, a 1/8" mesh net is placed downstream of the redd to capture egg/alevins washed out during the excavation. Egg/alevins collected are preserved separately following guidelines established by the WDFW Genetics Laboratory. The feasibility for sampling redds is dependent on flow fluctuations.

Steelhead fry will be captured by beach seining in shallow areas adjacent and downstream of the collection sites. The number of fry retained for genetic analysis is dependent on the number of egg/alevins sampled. Non-lethal genetic tissue samples will be collected from fry by removing a combination of ventral and adipose fin clips. The schedule for seining of each collection site is determined by the estimated emergence timing for the site. Emergence timing for each collection site is estimated by noting the date of the first and last redd identified in the site and tracking the daily river temperature recorded at Priest Rapids Dam.

Excessive turbidity and river flows may hamper the identification of redds, and the collection of fish. We agree that the likely hood of a small population (<100 fish) of spawning steelhead may make it difficult to obtain samples of adults, egg/alevins, and fry.

**Project: 20024 Evaluate Fall Chinook Natural Production and Spawning Habitat Conditions in**
Sponsor: Washington Department of Fish and Wildlife

CBFWA tier: 2
ISRP review: Delay funding until deficiencies are corrected. Objective 2, 3, and 6 might be technically and programmatically justified, and a revised proposal that addressed only these elements might be fundable (at something less than 50% of the currently proposed project cost). Objective 1 has low probability of success, and Objective 4 already appears to have been addressed by other investigators (Category 1d).

ISRP Comment/Question: This is a proposal for new work to assess sedimentation of fall chinook redds and estimate outmigration of subyearlings. The problem noted is that most salmon carcasses recovered from fall chinook redds in the lower Tucannon River are unmarked, and it is known that many fall chinook in the area are strays. Therefore, the motivation for the study seems to be to answer whether fall chinook strays spawn successfully.

Response: The motivation for the study is to determine if fall chinook (stray or native origin) can successfully reproduce in the lower Tucannon. Hatchery supplementation has been proposed for the Tucannon River, so it is important that the managers proceed with supplementation with data that demonstrates the Tucannon River can support a native run of fall chinook. Furthermore, WDFW has no control on the amount of stray fall chinook that enter the Tucannon River; however, once the fish spawn, their progeny would be considered part of the Snake River ESU currently listed as “threatened” under the ESA, unless they can be determined genetically to be other origin (hence the genetic part of the study).

ISRP Comment/Question: The panel felt that objective 1, to determine the fate of redds, has little chance of success. The author acknowledges that high sedimentation precludes egg to alevin survival; is it really necessary to try to document poor survival (with a very low chance of success), or is it more prudent to accept poor survival as consensus and move ahead?

Response: Redd capping has been done by WDFW in the Yakima River with great success, and has occurred in other rivers. The Yakima River is substantially larger than the Tucannon River. Though the potential for failure with this project still exists, its success will be largely dependent on spring flows. WDFW does concede the fact that creating artificial redds, redd capping, and freeze coring will be very labor intensive, and removing these tasks from the study would decrease the cost of the project (30-40%). However, the data lost by not attempting such studies could be critical in the overall evaluation.

ISRP Comment/Question: The proposal also identifies a number of habitat issues in the lower Tucannnon associated with agricultural practices, and it appears that the project would really be a habitat survey of some kind. Furthermore, to the extent that this is a habitat project, it has not addressed the question of prior watershed analysis, as required in the Request for Proposal, and on this basis alone, should be given a low priority for funding. If the proposers decide to resubmit in the future, they need to either focus the project more clearly, or develop a better and more convincing argument that they can address the breadth of issues raised. Qualifications of the PI appear to be primarily in the fisheries area, if habitat issues are to be addressed, expertise in habitat science would need to be added to the project team.

Response: While there are some habitat issues in the lower Tucannon River, this study intentionally did not address them, as many of the habitat problems identified in the lower Tucannon River are being addressed by local landowners and the County Conservation District through the Tucannon River Model Watershed Program. Specific plans in the program call for a decrease in sediment loads (fencing, silt basins, no-till land management) and monitoring these changes (continuous recording sediment samplers). The Model Watershed Program has also begun re-vegetation of the riparian zone in portions of the river. The intent of this study was to examine how the degraded

habitat may be impacting the various life stages of fall chinook salmon in the Tucannon River, and assess the potential for future hatchery supplementation.

ISRP Comment/Question: Delay funding until deficiencies are corrected. Objective 2, 3, and 6 might be technically and programmatically justified, and a revised proposal that addressed only these elements might be fundable (at something less than 50% of the currently proposed project cost). Objective 1 has low probability of success, and Objective 4 already appears to have been addressed by other investigators (Category 1d).

Response: The managers partially agree. A portion of Objective 1 would also need to be funded (additional spawning ground surveys to collect DNA tissues for the genetic analysis). The keys to success in evaluating the reproductive potential for fall chinook in the Tucannon River will be to conduct intensive spawning ground surveys, collect the DNA tissues for genetic identification, and smolt trapping and marking for adult return information. Other data such as sediment loads, flows, channel stability, etc., would be useful for year-to-year correlations with success. Reduction in the proposal as such would eliminate the need for the graduate student as proposed.

**Project: 20025 Deschutes River Stray Summer Steelhead Assessment**
Sponsor: Oregon Department of Fish and Wildlife

CBFWA tier: 1
ISRP review: Do not fund. Proposal was technically inadequate due to lack of methodological detail, but reviewers encourage resubmission of a more complete proposal next year.

ISRP Comment/Question: Do not fund. Proposal was technically inadequate due to lack of methodological detail, but reviewers encourage resubmission of a more complete proposal next year.

Response: The NMFS indicated that the primary threat to the Deschutes River summer steelhead population was from the excessive numbers of upper basin stray fish that were entering the river and spawning with the native population. This threat prompted NMFS to designate this summer steelhead population as “threatened” under the Endangered Species Act. The longer this problem persists, the greater the risk to the Deschutes River population. Funding for this project should not be delayed.

ISRP Comment/Question: If done properly, this proposal offers the potential to meet an important biological need.

Response: Project Proposal #20025 was submitted by the Oregon Department of Fish and Wildlife in response to agreement from the Columbia River Basin Stray Steelhead Working Group. The Deschutes River summer steelhead are listed as a Threatened Species under the Endangered Species Act. National Marine Fisheries Service acknowledged that this listing was prompted by the swamping of the depressed wild steelhead population by large numbers of out-of-basin stray summer steelhead. Project Proposal #20025 called for a one-year project to analyze all the existing data on upper Columbia Basin hatchery steelhead production and release strategies. It was believed that this analysis could help identify specific factors that have resulted in the straying of thousands of steelhead into the Deschutes and John Day rivers.

This proposal was developed after lengthy consultation with other anadromous fish managers representing the various state, tribal, and federal fisheries management entities in the Columbia River Basin. The Stray Steelhead Working Group supported this approach as the best initial step to help identify the potential sources/causes of the steelhead straying problem using currently available data.

ISRP Comment/Question: The objectives are fairly clear, but technical details of the activities are inadequate and pose a challenge in establishing the dimensions of the task and whether or not one year and this budget are sufficient.

Response - Stray Steelhead Working Group members, familiar with the types of data available that would be reviewed and summarized for this proposed project, felt that this proposal could be completed in one year with the funding as proposed.

ISRP Comment/Question: Reviewers are left to speculate, then, if the proposal is based on sound scientific principles and if the objectives are fully defined. The proponents should offer more information on analytical methods and in describing individual tasks under objectives 1 and 2.

Response - The Stray Steelhead Working Group felt this was a sound approach to help identify the potential causes of the steelhead straying. The subsequent objectives are straightforward: 1) assess the magnitude of the problem, 2) determine the cause(s) of the problem, and 3) report the findings on the problem. The various tasks identified in the project proposal for each objective provided a cursory explanation of the work proposed, but did not explain in detail how the tasks would be accomplished. The following narrative will explain in more detail how this work will be done.

Objective 1 - Assess the magnitude of straying of summer steelhead into the Deschutes River.

Task a. Estimate the numbers and proportion of hatchery strays, Deschutes hatchery, and wild steelhead at Sherars Falls (R.M. 43) sport and tribal fisheries, Pelton Trap (R.M. 100), and Warm Springs National Fish Hatchery from 1977 to present based on fin clips.

Task b. Determine origin of hatchery stray steelhead at each recovery location in the Deschutes River subbasin based on coded wire tags (CWT). CWT data revealing each fish's origin, broodstock, release date, age at release, size at release, numbers released with the CWT tag, numbers of fish that are expected to have lost CWT tags, numbers in the marked group that were not marked, and the purpose of the marking (i.e. production, experimental, etc.) can be obtained by querying the regional Mark Sampling Program administered by Pacific States Marine Fisheries Service (PSFMC), or individual state hatchery coordinators, or individual hatchery managers.

Task c. Determine the stray rate (proportion of CWT recovered in the Deschutes subbasin) for all Columbia Basin hatchery stocks at each recovery location in the Deschutes subbasin by brood year and run year.

Task d. Summarize stray steelhead information for all Columbia River hatchery steelhead stocks to characterize stray propensity.

Task e. Quantify wild strays at each Deschutes subbasin location based on radio telemetry data and tagging at Sherars Falls.

Task f. Characterize spatial and temporal distribution and dropout characteristics of steelhead strays into the Deschutes based on 1996 and 1997 radio telemetry results.

Objective 2. Determine the causes of straying of adult steelhead into the Deschutes River.

Task a. Determine the relationship between stray rate and wide scale stock (A vs. B steelhead) and geographic (Snake vs. upper and lower Columbia) differences.

Task b. Determine the relationship between stray rate and hatchery practices (broodstock source, rearing method, size and time of release, release location and method) and experimental treatments.

Task c. Determine the relationship between stray rate and juvenile migration (timing) and juvenile migration conditions (flow, temperature, and other environmental factors).

Task d. Determine the relationship between stray rate and juvenile fish transportation and transportation method (truck vs. barge).

Task e. Determine the relationship between stray rate and adult migration (timing) conditions (flow, temperature and other environmental factors).

A detailed work plan including specific hypotheses, statistical analyses, methods, approaches, tasks, and schedules for each objective has not been completed, since this effort will require staff work and coordination to accomplish. The Deschutes Straying Work Group agreed that this would be the first task of the project leader assigned to this

project. The work plan will be reviewed by the work group, CBFWA's Fish Passage Advisory Committee, US v. Oregon's Production Advisory and Technical Advisory Committees, and BPA to insure that the proposal is scientifically sound and will meet stated objectives.

ISRP Comment/Question: Why this activity is not being done already by some agency is unclear. The need for BPA funding should be more clearly established.

Response: The Stray Steelhead Work Group attempted to get funding for this project from a number of state and federal agencies. ODFW offered to provide office space and equipment, but none of the other agencies offered any financial support. This problem may be directly associated with mitigation hatchery programs and/or the anadromous juvenile transportation program. The task force felt there was justification in seeking BPA funding to identify the source of the problem and that the proposal is consistent with the Columbia Basin Fish and Wildlife Program.

**Project: 20026 Evaluate Status Of Coastal Cutthroat Trout Above Bonneville Dam**
Sponsor: Oregon Department of Fish and Wildlife

CBFWA tier: 2
ISRP review: Do not fund. Resubmit the proposal next year with a more comprehensive study plan that includes better sampling design and a justification for lethal sampling methods.

ISRP Comment/Question: The uncertainty over methodology, including who is to do genetic analysis, is a clear weakness. A potential major problem is the proposal to sacrifice 50 individuals from each population for protein electrophoretic analyses and aging. Other techniques should be substituted.

Response: The major focus of the criticism was directed at the proposed genetic analyses, which comprises the smallest body of work in the proposal. The reviewer's comments also showed a lack of careful reading of what was proposed for the laboratory work. The WDFW genetics lab in Olympia is an internationally known facility with a long history of performing pioneering work in fish genetics and in fact is one of the largest such facilities on the west coast of North America. The lethal sampling for otoliths was not for aging of fish but, rather, for applying the new and innovative technique of elemental analysis to determine if juvenile fish had an anadromous maternal parent. Non-lethal sampling of scales was to allow us to age the fish.

ISRP Comment/Question: In fact, the authors state that one day they may employ some newer DNA based techniques. Reviewers believe that day should be now.

Response: The reviewer suggests that DNA methods should be employed for this work. That is incorrect, although the enthusiasm of the reviewer for the techniques is warranted. Newer DNA methods show great promise and WDFW is actively pursuing their use in the brand new DNA lab in Olympia under the direction of Jim Shaklee. However, these techniques would not be appropriate for describing how cutthroat trout above Bonneville Dam fit into the grand scheme. The genetic questions posed in our proposal demand that we have a baseline of genetic information against which to compare genetic information from the putative coastal cutthroat above Bonneville. That baseline exists and is accessible if we use allozyme methods. That baseline using DNA techniques does not exist, probably will not be created for some years, and will not become accessible until after that. Please note that in our original proposal for this work (submitted in 1998) we proposed using DNA methods and broader sampling of cutthroat throughout the middle and lower reaches of the Columbia. The reviewers of that proposal suggested that we restrict our focus to cutthroat populations above Bonneville and the new proposal reflects our efforts in that direction.

ISRP Comment/Question: The proponents also need to describe the sites where they will collect samples or at least the criteria they will use to select the sites. Four streams are an insufficient subset.

Response: The distribution of cutthroat above Bonneville Dam is unknown and that is the main point of the proposal. Most of the fieldwork and virtually all of the requested funds are directed at determining the distribution.

Four subpopulations collected from a geographical region as small as outlined in the proposal represents greater sampling intensity than is usually used in this type of work.

ISRP Comment/Question: The reviewers are not convinced that questionnaires would provide abundant or useful information on genetic purity unless the surveys encompass those who have done the analyses.

Response: The questionnaires are intended to document anecdotal information and verbal history, as well as point investigators to recorded information in reports or obscure files.

ISRP Comment/Question: How will relative abundance be determined? How will appearance, external diseases, and overall health be determined. Scales and tissue samples will be taken as a statistical sample for what?

Response: Assessment of relative abundance relies heavily on experience and it certainly can be a subjective measure, but it serves to fill a transitional void between simple presence/absence data and more objective and expensive census measures. Investigators on our team are well versed in census methods, measurement error, and statistical comparisons. When and where feasible, efforts would certainly be made to replace indexes of relative abundance with more quantifiable measures of abundance.

ISRP Comment/Question: Aren't all streams potentially accessible for sampling? Is there a potential for bias here?

Response: Accessibility of streams is simply a reality that investigators have to incorporate in assessments. Many of the small streams within the coastal cutthroat's distribution in the Columbia Basin are located on private property, the owner's of which may or may not allow access.

ISRP Comment/Question: How do the authors intend to record qualitative and quantitative data on other fish species to establish the role of species interactions in limiting production?

Response: Perhaps wording for this task was too vague. As is, however, the statement in the methods under Task 2b does imply that the relationship of other fish species with that of cutthroat trout abundance (in terms of population numbers and biomass) will be investigated. Methods for quantitative assessment of populations of cutthroat trout in Task 2b are explicitly stated, and these same methods will be used to simultaneously assess populations of other fish species. One way that the role of species interactions can be assessed is by analysis of covariance using cutthroat abundance as the response variable, stream or location as a dependent variable, and habitat measures (e.g., large woody debris, pool frequency) and species-specific non-cutthroat abundance as covariates.

ISRP Comment/Question: Why do so many tissue samples need to be collected for allozyme electrophoresis? The sample size of 50 seems high.

Response: Fifty fish per population is very much a minimum regardless of the analytical methods employed. Most workers in the field of fish genetics consider 75 to 100 fish a comfortably adequate sample size.

**Project: 20027 Electronic Columbia Basin Watershed Newsletter**
Sponsor: Intermountain Communications

CBFWA tier: 3
ISRP review: Delay funding until the proposers provide more detail on the missing information described in the comments.

No response provided.

**Project: 20028 Purchase Conservation Easement from Plum Creek Timber Company along Fisher**
Sponsor: Montana Department of Fish, Wildlife and Parks

CBFWA tier: 2
ISRP review: Fund (High priority).

ISRP Comments/Question: The budget section is a bit weak, but this is overcome by the strength of the rest of the proposal.

Response: The project sponsors are currently negotiating with Plum Creek on the level of protection for fisheries concerns that will result from the proposed conservation easement, and the value of the affected lands. They are also developing a map of the most valuable corridors to be included for fisheries benefits in the proposed easement. Upon completion of these negotiations, they will be able to fine tune the budget section and be more specific on easement sites. The reason CBFWA placed this project in Tier 2 was because Montana could not provide specifics on the level of fish protection that will be provided by the proposed easement, nor could they show the specific locations where the easement would apply. The project sponsor believes that the concerns by resident fish managers are valid and will be addressed by their current efforts. The Fisheries Program Officer will not allow this project to proceed until they are assured that the easement will provide sufficient long-term protection for fish. The wildlife aspects of this project are strongly supported and this should be a high priority for fisheries mitigation when the existing deficiencies are corrected.

ISRP Comments/Question: The main negative comment was that the project sponsors need to clarify the nature of logging that could continue on the proposed easement properties and estimate the effects on the fish and wildlife resources intended to be protected.

Response: The project sponsors agree. Fish and wildlife personnel will document the locations and level of protection afforded by the proposed easement.

**Project: 20033 Rehabilitate instream and riparian habitat on the Similkameen and Okanogan**
Sponsor: U.S. Fish and Wildlife Service

CBFWA tier: 3
ISRP review: Fund (medium priority), but cost per mile is very high and vulnerability of project to anthropogenic and natural disturbances has not been adequately considered.

ISRP Comment/Question: The proposal's primary goals are to improve instream and riparian habitat improvement around Driscoll Island, which offers the potential for broad benefits to fish and wildlife. River channels around Driscoll Island provide migration corridors, spawning areas, and rearing habitat for summer chinook, and summer steelhead, as well as migration corridors for sockeye salmon. Bull trout may be present. The project has a clear relationship to overall goals for anadromous fishes in the Okanogan River, although they could have better described potential benefits in the context of the entire Okanogan subbasin.

Response: The ISRP misunderstood the primary purpose of this project. The primary goal of the project is to construct a bridge for a haying operation on Driscoll Island.

ISRP Comment/Question: Reviewers were concerned that the proposal did not describe the potential for passive restoration methods. Rather, the proposal seems to assume that expensive bioengineering as the solution for habitat improvement.

Response: This specific site lends itself to passive restoration as a more appropriate remedy. The Okanogan is a sediment rich environment, which lend itself to passive restoration favorably. Until the disturbance is removed, restoration will provide limited benefit at a very high cost. Not addressing the root cause – disturbance of riparian area combined with high sedimentation in-stream will not eliminate the problem.

ISRP Comment/Question: The proposed activities are focused on improvements in water temperature (primary limiting factor), riparian vegetation, streambank stability, and habitat complexity are anticipated.

Response: The high water temperatures that exist in the Okanogan River are the result of several factors, (influence from 4 lakes within B.C. where water is drawn from the surface, tributaries which are diverted for irrigation, disconnect from the floodplain). This outcome of this project would not lower the water temperatures to any

detectable levels. The results of a recent sediment yield survey conducted by the Natural Resource Conservation Service found the Similkameen River basin had one of the highest sediment yield per acre in the Okanogan River basin. The high sediment is likely the main cause in channel migration and severe erosion throughout the Okanogan River. Until high sediment input and surface erosion is addressed in this basin, the likelihood of substantial results is highly in question. The monies requested for this project should be directed toward another sub-basin.

**Project: 20034 Impact Of Flow Regulation On Riparian Cottonwood Ecosystems**
Sponsor: BioQuest International Consulting Ltd.

CBFWA tier: 3
ISRP review: Fund (High priority). However, it is unclear whether they will be able to implement this project due to problems with the commercial IKONOS satellite, which they were to rely on for locating cottonwood groves.

ISRP Comment/Question: Fund (High priority).

Response: Based upon review of this project in relationship to Wildlife Caucus research criteria, this project did not identify a specific need under the Council's program nor did it satisfy any identified data gap or need for continued implementation of a mitigation project. There is a plethora of existing literature on this subject that has been used by the Basin's managers in the development and implementation of riparian cottonwood projects.

**Project: 20036 Evaluate bull trout movements in the Tucannon and Lower Snake rivers.**
Sponsor: U.S. Fish and Wildlife Service - Idaho Fishery Resource Office

CBFWA tier: 2
ISRP review: Do not fund. This proposal is not scientifically sound.

ISRP Comments/Question: This is a new proposal for monitoring and evaluation of the Tucannon Hatchery bull trout through the lower main stem Snake River system, with particular emphasis on passage efficiencies at Lower Snake river dams. Reviewers found the proposal to lack a sound scientific basis. There is a need to protect bull trout, but no indication is offered of their current status in the area. The ISRP strongly suggests that determination of status of bull trout be the first priority before trying to identify any passage limitations resulting from the hydropower system. There is little information on the status of bull trout in the Tucannon nor on the proportion of the population that may migrate to the mainstem. If only a few do so, the 20 fish with radios will yield minimal information.

Response: It is important to note that if the migratory timing and behavior of bull trout in the study area is similar to that of other migratory subpopulations in the Columbia River Basin, past sampling efforts and adult fishway observations would not typically encounter the species. As indicated in Section 8, Project Description of the proposal, adult bull trout that migrate to mainstem habitats utilize that habitat during the winter and early spring. Very little mainstem sampling has occurred during this time period, and adult fishway window counts at Snake River dams are abandoned in the winter months. As a result, and as the ISRP review indicated, very little is known about bull trout use in Lower Snake River. This project would provide an initial assessment of their use in the mainstem, and for the purposes of efficiency, the project sponsors chose to include dam passage assessments at a minimal cost (15-20%) to the overall project.

ISRP Comments/Question: There is no discussion of alternative methods, and what is already known, if anything, about these populations.

Response: During coordination with WDFW, concerns were raised about incidental "take" of ESA listed anadromous salmonids while using conventional methods. They indicated that a collection permit would not be issued to sample with conventional methods due to anticipated "take" of non-target species.

There is indeed little known about migratory bull trout in the Tucannon and Lower Snake rivers other than the few mainstem observations previously referred to, adult trap counts at the Tucannon Hatchery weir, and some spawning distribution data. It appears that the project sponsors wrongfully assumed the only applicable data to this proposal

was that associated with the mainstem observations. Subsequent proposals for this project will include a full status review of the Tucannon subpopulation.

ISRP Comments/Question: Most references are to gray literature (unrefereed) reports.

Response: The reason for the preponderance of gray literature is that there are no published bull trout manuscripts to the project sponsors' knowledge in reference to the Lower Snake and Tucannon subbasins.

ISRP Comments/Question: The publication plan is weak (e.g. "Project reports will be distributed annually through annual progress reports"; "Opportunities will be explored to submit widely applicable findings to peer reviewed journals ….").

Response: The project sponsors stated that they "would explore opportunities to submit widely applicable findings to peer reviewed journals," and suspect that this statement was the source of the ISRP's comment. The "statement" could be strengthened by making a promise about publishing results, or even stating a number of manuscripts the project sponsors intend to publish from the project. The project sponsors intend to "strengthen" this statement in subsequent proposals.

ISRP Comments/Question: No cost share is proposed, and there is little sign of interaction with others as this proposal was being prepared.

Response: There are many projects in the mitigation program that do not include cost share. The project sponsors don't feel this comment is appropriate. As stated in the proposal (pages 4 and 12), the project sponsors are coordinating this project with WDFW, Nez Perce Tribe, University of Idaho, and USFWS-Ecological Services. The proposal also states the nature of the coordination, reason for contacts and roles/responsibilities of these entities in the proposed project.

ISRP Comments/Question: The Tucannon trapping proposal (Project 20024) would logically provide valuable bull trout movement data, but that possibility is not discussed.

Response: Regretfully, the project sponsors did not discuss possibilities for coordination with project 20024. The trapping proposal is a new project for FY2000 proposed by WDFW and the project sponsors were unaware of their intent to submit it. During coordination with WDFW, Dayton Lab, this "new" project was not mentioned, and as a result, a link between their proposal and Project 20036 was not indicated. The project sponsors will discuss how these projects may complement each other in subsequent project proposals.

**Project: 20038 Assess Habitat And Passage For Anadromous Fish Upriver Of Chief Joseph Dam**
Sponsor: Colville Confederated Tribes

CBFWA tier: 2
ISRP review: Do not fund. The scope of the survey work needs to be expanded. The measurements were a good starting point but too limited at present to identify limiting factors for anadromous fishes upstream from Chief Joseph dam.

ISRP Comment/Question: To demonstrate that the proposal is based on sound scientific principles, it should include, for example, the issue of potential competition and predation by non-native species.

Response: Fish species (both native and non-native) present upstream of Chief Joseph Dam exist throughout the mainstem of the Columbia River. Therefore, if there is a potential problem of competition and predation, it is not unique to the Chief Joseph Dam pool.

ISRP Comment/Question: While an examination of current velocity and substrate composition in the reservoir is a good starting point, reviewers would welcome a more careful examination of intragravel water quality, identification of areas of upwelling groundwater, and other species that could potentially act as predators.

Response: The ISRP requests further examination of intra-gravel water quality and identification of areas of upwelling groundwater. This would be difficult to examine or detect upwelling groundwater, particularly at this scale (52-mile reach mainstem Columbia River). This project was proposed to evaluate the substrate for quality and quantity of spawning habitat. A better approach to evaluate sites for upwelling groundwater may be to investigate fish spawning areas. This could be accomplished using radio-tagged adults.

ISRP Comment/Question: Also, some references on the ecology of lake-spawning salmon would be helpful.

Response: The Chief Joseph Dam is operated as run-of-the-river dam. The normal fluctuation of the pool is approximately 6 feet. Velocities within the pool vary from year to year and ranged from 1.4 ft/sec May 1997 to 3.8 ft/sec September and November 1998. Therefore this pool provides a lotic environment rather than a lentic environment typical of storage-type reservoirs.

ISRP Comment/Question: The addition of a food web study component to the proposal should also be considered.

Response: The addition of a food-web study component may provide valuable information. However, it is expected that the cost and time to complete the study at this scale would be substantial and possibly excessive.

**Project: 20049 Evaluate Sediment Transport In Spawning Habitat, Kootenai R., Idaho**
Sponsor: U.S. Geological Survey

CBFWA tier: 1
ISRP review: Do not fund. ISRP encourages submission in FY2001 (perhaps as part of another proposal), addressing the ISRP's concerns.

ISRP Comment/Question: Despite problems with sturgeon egg incubation success, the proposal does not make a compelling argument nor present sufficient evidence that this problem is caused by sedimentation.

Response: Although increased experimental flows during the sturgeon spawning season have encouraged sturgeon to spawn (as documented by collection of eggs on egg mats by Idaho Department of Fish and Game IDFG), less than 20 naturally recruited juvenile sturgeon have been documented from the 1991-1999 year classes. Scientists believe the bottleneck to recruitment occurs at the egg/larval/YOY stage because cultured white sturgeon released at Age 1 and 2 have been recaptured in large numbers in subsequent years. White sturgeon eggs are adhesive and demersal and normally become attached to rocky substrates. Upon hatching (9-15 days after spawning event), larvae would normally seek cover in intergravel spaces. With limited exception, sturgeon spawn in a low gradient portion of the river below Bonners Ferry, over sand-silt substrate. Significant recruitment abruptly ceased in 1975 with June operation of Libby Dam. This hydro project altered habitat/flow-stage relationships in two ways. One, peak flows were reduced by as much as 75 per cent passing through Libby, MT. Deposition and re-suspension of fine-grained sediments is a natural occurrence in free flowing rivers. The re-suspension of fine sediment occurs during spring snow melt high flow and the scouring leaves coarser grained material (gravels, cobbles, etc.) on the river bottom. With the altered channel/hydrograph/flow, the river may lack the energy to remove fines from the spawning area. Second, the control of peak flows by the combination of Libby (MT) and Duncan (BC) dams has allowed for the annual peak stage of Kootenay Lake (and the Kootenai River as far upstream as Crossport, above Bonners Ferry, through backwater effects) to be lowered an average of 8 feet. Both effects could change the energy/ sediment transport relationships within the sturgeon spawning reach.

ISRP Comment/Question: Aspects of the proposal are extremely sketchy, and indicate only minimally how the proposed work would fit into the broader scheme of Kootenai River fisheries mitigation and enhancement efforts.

Response: The project managers in the Kootenai drainage will develop an umbrella proposal (or comprehensive subbasin summary) that includes this project. This project is considered a high priority by the USFWS and the Kootenai managers to address the question of whether or not there is rocky substrate buried between RKM 229 and 245 through reduced energy/flows altered by Libby Dam. This project will address the physical aspects of the spawning area in order to help the managers make decisions about the following questions concerning white sturgeon mitigation and enhancement efforts:

If there is rocky substrate in the spawning reach, can conditions be restored through channel narrowing or increased flow? Are replacement rocky substrates a viable option? Is there a need to re-establish higher water stages to encourage sturgeon to spawn over rocky substrates upstream?

The managers need a definitive data set through coring and sediment budgets to help determine pre- and post-dam conditions in the spawning area. This information will then assist them in the research direction and water management decisions.

ISRP Comment/Question: One reservation is about its status as a stand-alone project that might better be included as part of the ongoing tailwater studies (as the earlier velocity work had been).

Response: Project 8806400 could include this project as a sub-contract for FY2000.

**Project: 20052 Strategies To Limit Disease Effects On Estuarine Survival**
Sponsor: Oregon State University, National Marine Fisheries Service

CBFWA tier: 2
ISRP review: Fund in part. Fund objective 2 and proceed with objective 3 pending results from 2. Do not fund objective 1 (45% of budget) due to the uncertainty in interpretation of results.

ISRP Comment/Question: Samples collected in the river and in the estuary seem to be of little comparative value since a change in pathogen incidence may be due to sampling a different stock of fish, or it may reflect progression of the infection or death of the infected fish.

Response: Uncertainties are a natural component of field studies. The level of uncertainty in the field study is minimal; consisting of only two possibilities as acknowledged by the reviewers. If the null hypotheses that pathogen distribution is equivalent above and in the estuary is rejected, it can only be due to "the infection or death of infected fish" as they migrated downstream or "may be due to sampling a different stock of fish."

Initially; the project sponsor would determine which pathogens occur and if a difference in prevalence or intensity of these pathogens exists in the populations downstream relative to the populations upstream. This would be a multiyear effort where if a change in intensity or prevalence is determined downstream a genetic component could be added in a following year to determine which genetic stocks are being sampled.

Although genetic analysis can be added to the experimental design, the reviewers weigh too heavily the importance of determining which stocks of fish will be sampled downstream relative to upstream in the field study. For the initial study it is not important to determine if sampling the same genetic stocks occurs. It is proposed to sample on both a temporal and spatial scale. Both sites will be sampled four different times during peak outmigration of spring chinook salmon. Knowing the migration rate of spring chinook between the fresh water and estuarine site (Dawley et al. 1982) provides the opportunity to sample from the same outmigrating population (which may be made up of several different stocks) both upstream and downstream. Also, all information provided by fish caught with CWTs and PIT tags will be used to determine the origin of the sampled fish.

ISRP Comment/Question: How would observations from these samples be associated with the laboratory component of this project?

Response: Laboratory experiments are designed to study the progress of infection by each of the three pathogens and to examine methods to manage fish populations so that disease effects are minimized as fish enter the estuary. The field work proposed provides valuable data to support the need for these management actions and may be critical in identification of specific stocks which would benefit from alterations in release times, administration of vaccines or feeding immunostimulants.

Field sampling is a natural corollary to the laboratory studies. Efforts to rebuild anadromous salmon runs requires a comprehensive program that focuses on all life history stages and identifies all opportunities to increase survival. In

such an approach, a focus on poorly understood and critical periods of the life cycle is necessary, and the transition of juvenile salmonids from freshwater to sea water is clearly such a period. The three pathogens that have been chosen for study have been detected in fish from the Columbia River Basin. However, it is unknown whether these pathogens actually influence survival of chinook salmon once they leave freshwater. The field sampling is a way to determine if in fact infected fish are disappearing from the population. Studies have indicated a potential exacerbation of these infections upon saltwater entry. Therefore, all three of the laboratory experiments described in objective 2 are designed to examine disease progression and survival following a sea water challenge.

Without the field surveys, the potential of the pathogens to influence estuarine survival exists; however, the interpretation of the impact will remain speculative without empirical evidence. The influence of these pathogens on fish entering the estuary would remain unclear. The design of the field study is properly constructed to increase the weight-of-evidence to support the interpretation that disease does influence survival, in contrast to the concerns of the reviewers. The full proposal was designed with both laboratory and field components to fully integrate the effects of these pathogens on estuarine survival into the necessary ecological context. The recommendation by the reviewers to support only the laboratory component will leave a large void in the interpretation of the findings generated by this proposed study.

ISRP Comment/Question: More information on the extent of research and results from previous work of this kind would have been useful.

Response: Although much is known about aspects of the pathogens that can be studied under laboratory conditions (disease pathogenesis, effects of temperature, diagnostic methods etc.) and in hatcheries (disease transmission, treatment), there is relatively little information on pathogen effects in wild fish or hatchery fish after their release. A great deal of research has gone into mitigating disease effects, however, there is little known about the effects of pathogens when the infected fish enter salt water and how these effects might be lessened.

ISRP Comment/Question: Linkages to other BPA/FWP projects and priorities are listed but not described in sufficient detail to evaluate actual interaction or importance.

A critically-related project that we have linked our proposal to is project # 9801400, Ocean Survival of Juvenile Salmonids in the Columbia River Plume. The panel actually felt that "these proponents should consider deletion of the fish health work especially if 20052 is funded.” This recommendation by the ISRP is conflicting especially if they felt at one point that the field surveys in 20052 are not to be funded. The pathogen prevalence work in this study (20052) targets fish from a fresh water and estuarine environment while the pathogen prevalence work in the supporting proposal (9801400) targets strictly a marine environment. Therefore, these two studies are complementary in beginning to answer the question as to what do the various fish populations look like relative to their pathogen distribution. Dr. Kym Jacobson is a co-principal investigator in both projects and she will ensure that the fish health work of both studies will be intimately coordinated.

In addition, the U.S. Fish and Wildlife have demonstrated their support for these types of field surveys by funding the "National Wild Fish Health Survey.” The purpose of this survey is to develop a systematic watershed approach to determine the distribution of fish pathogens. This proposal takes these studies further by determining if (field study) and how (laboratory studies) certain pathogens are altering salmon survival in the estuaries.

ISRP Comment/Question: In summary, the question to be addressed is of programmatic value. Due to the uncertainty of the interpretation, the fieldwork aspect of the proposal is considered weak. The lab work is supportable. Each reviewer noted the discrepancy between the uncertainty of the field portion of the work (objective 1) and the much more controlled laboratory components, with the latter being much more likely to provide information of value to the FWP.

Response: Although some of the CBFWA managers felt this project could provide valuable information for the region, the results could not be tied to a direct management action and therefore CBFWA considered the project a lower priority when compared to all projects proposed for the Program.

**Project: 20057 Strategies For Riparian Recovery: Plant Succession & Salmon**
Sponsor: Oregon State University

CBFWA tier: 3
ISRP review: Fund. Review in FY2002 funding cycle.

ISRP Comment/Question: Fund. Review in FY2002 funding cycle.

Response: Most habitat restoration projects implemented through the Fish and Wildlife Program currently focus on mimicking native species and diversity in revegetation of riparian areas. It is assumed that terrestrial and aquatic invertebrate species natural to the native plant community will be a result of these efforts. At this time, more detailed knowledge regarding riparian plant/invertebrate/fish relationships is not considered a high priority at the expense of on-the-ground actions to restore degraded habitats.

This proposal focuses on issues concerning federal programs such as the Conservation Reserve Enhancement Program that proposes to implement large tree plantations along streams using non-native species. While the use of non-native riparian plants for restoration efforts is a significant concern to the SRT, the project managers believe there already exists a preponderance of evidence which demonstrates the dangers of introducing non-native flora or fauna. Perhaps another approach is necessary to remedy this problem.

**Project: 20061 Influence Of Marine-Derived Nutrients On Juvenile Salmonid Production**
Sponsor: U.S. Geological Survey, Biological Resources Division

CBFWA tier: 2
ISRP review: Do not fund, programmatically and technically deficient. Submit revised proposal next year.

ISRP Comment/Question: Do not fund, programmatically and technically deficient. Submit revised proposal next year.

Response: This project was originally proposed in response to an increased region-wide interest in the possible use of adult salmon carcasses to enhance stream productivity and to improve rearing conditions for juvenile anadromous salmonids. Because of this interest, the managers proposed for FY1999 the development of a long-term nutrient enrichment management program. The FY1999 proposal focused primarily on organizing and coordinating a working group of interested parties to develop a region-wide nutrient enhancement research plan. Other activities were proposed as out-year expenditures and included measures aimed at quantifying stream productivity and determining the effects of the experimental introduction of nutrients. This proposal received very favorable reviews from the ISRP and was one of only a few projects placed in the innovative research category. However, CBFWA placed the project in tier 3 and recommended against funding, largely because they favored immediate field-oriented research assessing the use of nutrient enrichment as a management strategy.

CBFWA's concerns were addressed in the FY2000 proposal by eliminating tasks aimed at developing a nutrient enrichment working group and by including objectives that were more field research oriented. These changes were apparently favorably received by CBFWA, because the project was upgraded to the Tier 2 category in the FY2000 proposal. However, in their FY2000 review, the ISRP recommended a Tier 3 level of funding, a complete reversal of their earlier FY1999 recommendation. One of the primary reasons for re-submitting this proposal for FY2000 was because of the favorable review of the FY1999 proposal received from the ISRP.

ISRP Comment/Question: How is this proposal going to advance ongoing efforts in the region? Would the information provide another tool for salmon recovery?

Response: Nutrients derived from adult salmonid carcasses are fundamentally important to salmonid and stream ecology and, as such, should be a component of the NPPC Fish and Wildlife research and management program. The use and evaluation of this technique seems to be an omission in the NPPC program. This proposal is directed at evaluating when and where nutrient enhancement might provide the most benefit and thus would provide managers with another recovery tool. The reviewers spent an inordinate amount of time in this paragraph criticizing the

authors for the use of the word “overwhelming” in a description of historic adult anadromous salmonid abundance in the basin. This criticism seems trivial and unwarranted, particularly given the well-known scale of declines of anadromous salmonids throughout the basin.

ISRP Comment/Question: Only minimal collaborative efforts (e.g., with the Wind River Ecosystem Restoration Project #9154) are described.

Response: We recognize this area as a weakness in the proposal and will revise it in the future. There are a number of ongoing recovery or restoration projects in areas with depressed adult returns where our activities could be integrated more efficiently and effectively.

ISRP Comment/Question: With regard to methods: Stable isotope sampling should probably encompass more sources (e.g., stream POM), and reviewers find it curious that no effort is to be made to examine the potential contribution of MDN to riparian and adjacent upland consumers.

Response: We recognize the potential importance of marine-derived nutrients to organisms (both aquatic and terrestrial) other than salmonids. We emphasized research on juvenile salmonids (and some other trophic groups) for a number of reasons, including: 1) juvenile salmonid condition and production were the primary response variables of interest; 2) minimizing the number of trophic groups studied, and associated isotope analyses, would save on costs; and 3) information on juvenile salmonids would likely be the most transferable and useful to fishery managers.

ISRP Comment/Question: Proponents intend to examine physiological factors as a measure of fish health, but no justification is provided.

Response: A number of studies have examined the influence of marine-derived nutrients on measures of fish production, most commonly growth and condition. To the managers’
knowledge, no studies have linked nutrient enrichment to the physiological condition of juvenile salmonids, despite well reported findings linking physiology with successful migration and smolt transformation. Physiological measures of fish health and smoltification were included in this proposal to examine the possible influences of increased nutrient levels on the condition of juvenile salmonids beyond that normally seen by just examining growth as a response variable. There are a number of questions related to juvenile salmonid ecology and physiology that could be addressed with these data, such as: Does nutrient enhancement result in more successful smolts or earlier migrating fish?

**Project: 20064 Upstream migration of Pacific lampreys in the John Day R: behavior, timing**
Sponsor: U.S. Geological Survey, Biological Resources Division, Columbia River Research Laboratory

CBFWA tier: 2
ISRP review: Fund

ISRP Comment/Question: Hypotheses to be tested are somewhat unclear. For example, does the expression “consistent temporally” mean between months or years or longer? Also, because two years of fieldwork are proposed, does this suggest only that the authors will determine if migration and spawning occur at about the same dates in two successive years? It is unclear how lampreys are to be randomly selected for tagging. The proposal could be improved by additional detail to explain temporal and spatial evaluation of lamprey migration and spawning. These factors may be impacted by water diversion devices and other anthropogenic impacts such as water flows, depths, stream temperature etc.”

Response: The difficulty in being more specific within the objectives lies in the lack of information available on the life history and habitat requirements of the Pacific lamprey. Since there is little known about Pacific lampreys, researchers in the Columbia River Basin studying these fish are trying to work closely together to share knowledge as quickly as possible. More will be known about Pacific lampreys by the time this project is implemented. Considering this limitation, an attempt to plot out a modest first look at the migration behavior and habitat preferences of these animals was proposed.

Two years of sampling might be too limited and it may be necessary to extend the time frame of this project. Run timing estimates from trapping at Bonneville Dam will be used to plan the trapping regime at Tumwater Falls. A subsample of the total captured per day will be radio tagged. Lampreys will be radio-tagged over a two month period. Radio-tagged fish will be located and a description of movements and habitat preferences over time for these animals will be summarized. Until more is known about how Pacific lampreys move through the John Day River, it is difficult to be more specific about analysis of this data; however, certain factors such as discharge, depth, and water temperature are expected to be important and will be evaluated in terms of natural and disturbed situations. Oregon State University's extensive database on the John Day Basin will facilitate these analyses.

All lamprey proposals were reviewed by the Anadromous Fish Managers as a group in order to determine which lamprey projects would be considered management priorities. This project was assigned a Tier 2 according to the information that it would provide when compared with other lamprey studies proposed for FY 2000.

**Project: 20065 Identification of larval Pacific lampreys (Lampetra tridentata), river lamp**
Sponsor: U.S. Geological Survey, Biological Resources Division, Columbia River Research Laboratory

CBFWA tier: 1
ISRP review: Fund for duration to 2002 as proposed.

ISRP Comment/Question: Under Objective 1 they only say they will develop a time series from artificially spawned and reared ammocoetes and prepare "conventional morphometric descriptions". More detail here would have been useful.

Response: Conventional morphometric descriptions typically include meristic counts and morphometric measurements. For examination of larval lampreys, meristic counts this might include counting the total number of myomeres; counting myomeres between certain structures on the animal's body; counting teeth and description of the dentition pattern. Measurements might include: distance between specific structures, width and girth at specific structures. Other descriptive characteristics may be included, such as location and density of pigmentation on the animal's body.

ISRP Comment/Question: Methods for objective 2 are similarly vague in that they only state that they will test four temperatures but give no specifics to the temperatures proposed or why these were chosen.

Response: To evaluate temperature effects on early life history stages of lampreys, we intend to hold eggs and larvae at four temperatures. Volitional spawning was initiated at 12.5 °C in western brook and Pacific lampreys in captivity Columbia River Research Lab. Optimal spawning temperature for sea lampreys in the Great Lakes is reported to be 18°C. Based on this information, we propose to hold lampreys at 8°C, 13°C, 18°C, and 23°C.

ISRP Comment/Question: There is some minor concern that the proposal depends heavily on collection of ammocoetes under other projects proposed to the FWP, and there is no indication of how these collections would be made in lieu of FWP funding of these other projects.

Response: If the CTUIR, IDFG, and USFWS lamprey projects are not funded, the project sponsors may have to assume more responsibility for the collection of specimens. However, there is an established rapport with other lamprey researchers in the region and there is confidence they will provide at least some assistance with this task. There has been successful collaboration with non-FWP projects, such as the Confederated Tribe of the Siletz Indians, the Makah Indian Nation, and individuals in Alaska to receive specimens from outside the Columbia River Basin.

**Project: 20071 Restore Crab Lake And Adjacent Reaches Of Crab Creek.**
Sponsor: Ducks Unlimited, Inc.

CBFWA tier: 3

ISRP review: Fund for one year (low-medium priority). Subsequent funding contingent on addressing ISRP comments. The project was not preceded by a watershed assessment and there was some question whether the activities would enhance native or non-native fishes.

ISRP Comment/Question: Fund for one year (low-medium priority).

Response: After lengthy review and subsequent contact with the proponent to get more information, this project was identified as failing at least one of the threshold criteria for funding (in-lieu). The Caucus determined that it was not in the best interest of the region to protect and develop habitat that would be used to generate income for a private group. It was evident that the landowners involved were seeking to develop a private duck club in conjunction with this project.

**Project: 20074 Eagle Lakes Ranch Acquisition And Restoration**
Sponsor: U.S. Fish and Wildlife Service, Columbia National Wildlife Refuge

CBFWA tier: 1
ISRP review: Delay funding until they provide more information on the priority of the project within the watershed, and a more complete explanation of negotiations over the price.

ISRP Comment/Question: Delay funding until they provide more information on the priority of the project within the watershed, and a more complete explanation of negotiations over the price.

Response: This acquisition has the highest priority by the FWS and the Conservation Fund, which is willing to front the money to guarantee that the purchase will happen.

ISRP Comment/Question: The proposal needs more information on price and value of the property.

Response: Now having an appraisal from the Conservation Fund and the appraisal produced the type of numbers that the project sponsor felt were needed to make the partnership work. The project does include a conservation easement, based on 60% of fee title purchase value, could cover as much as 1/2 of the property and still satisfy the seller. Although recent discussions have suggested 1/3 conservation easement, the rest fee title. Currently negotiations are under way with the private buyer to determine the exact location and amount of land that the project sponsor can secure in fee, which the project sponsor prefers because it allows more adaptive management options, and could secure public access.

ISRP Comment/Question: Out year costs are substantial.

Response: The proposal was based on three years for reimbursement of a portion of the purchase price, not the entire purchase. It also includes costs for habitat restoration; a requirement if this project is going to meet the mitigation credits that is the basis of BPA funding. Intact blocks of land with a willing seller that meets multiple objectives are very difficult to find. And based on the experiences the project sponsor has with land having similar potential, costs to restore function to disturbed habitats are substantial and not static. Unfortunately, noxious weed control requirements will not disappear even with fully restored habitats.

ISRP Comment/Question: The proposal would benefit by a better description of monitoring and restoration objectives.

Response: Goals are to restore at least 80% of the riparian, wetland, shrub and grassland habitats where exotic species now dominate, and to remove year round grazing from the system. Monitoring using standard protocols (photo points and vegetation transects, point counts and MAPS bird monitoring) would be used to document response to restoration activities, and to apply results to further management actions needed to restore both vegetation and wildlife populations (adaptive management).

ISRP Comment/Question: The amount requested is an estimate and the final amount is left open for the Fish and Wildlife Service to negotiate.

Response: During the proposal application period, there was little indication of what the property would appraise for. Now having an independent draft appraisal indicating that the land is valued near what the seller is expecting if purchased as refuge and private property with conservation easement. The higher the percentage in fee titles, the greater flexibility there can be with restoration and mitigation credit.

ISRP Comment/Question: The proposal gives a historic account of the ownership of the property without indicating what effect this history might have on the price of the land. One wonders, for example, what the effect on price might be in response to the owner's wish to retain part of the property in the face of bankruptcy. There is no discussion of this.

Response: The main reason for giving the history was to show the habitat value of the property from a FWS perspective and how the original 18,000 acres has been fragmented through time. Other than the threat of development there is no effect on land value. The appraisal is what determines how much FWS can pay for property and it appraised at a level that the sale could take place to the satisfaction of the seller. The bankruptcy was of a business partner to the seller. He has not expressed plans to retain a portion of the property. It is a third party that wishes to purchase the property for a hunting club, but cannot unilaterally meet the seller's price. The fee and easement purchase with some private holding is preferred because the private holding would be fully taxed by the county, while federal ownership yields PILT (payment in lieu of taxes) payments that have not been 100% for many years.

**Project: 20079 Assessing Adult Steelhead Escapement & Genetics In The South Fork Salmon**
Sponsor: Nez Perce Tribal Fisheries/Watershed Program

CBFWA tier: 1
ISRP review: Do not fund, rationale not adequately justified, technically inadequate. Previous studies that were to form the basis of this work were not summarized or reviewed

ISRP Comments/Question: Do not fund, rationale not adequately justified, technically inadequate. Previous studies that were to form the basis of this work were not summarized or reviewed. This is a new proposal to determine the status and genetic structure of the South Fork Salmon River steelhead. The proposal is flawed by the lack of a background literature review (Objective 1) was not conducted prior to development of the proposal.

Response: The Status Review of West Coast Steelhead from Washington, Idaho, Oregon, and California (Busby et al. 1996) highlights the need for additional data on steelhead abundance and characteristics. As stated in the funding proposal, very little is known about adult steelhead distribution and characteristics. The original proposal for this research focused on a single tributary to the South Fork Salmon River; however, given the recent listing of Snake River steelhead under the ESA and the larger need for additional data on steelhead abundance, this proposal was expanded to determine the status of steelhead within the entire South Fork Salmon River basin. The concluding remarks of the ISRP (listed below in entirety) do state, "The overall objective of monitoring status of the steelhead population in the South Fork of the Salmon is worthwhile and consistent with objectives in the FWP."

A literature search produced only one published study (Thurow 1985) that focused on adult escapement in the South Fork Salmon River basin. Other studies of the basin exist, but they focused on harvest (e.g.Ortmann 1964). Other studies that did focus on escapement were prior to Thurow 1985 (e.g., Bjornn 1966, Ortmann 1968). This literature was not presented in the proposal because the project sponsor did not feel it was pertinent to a present day assessment of the stock. Efforts will continue (Objective 1, Task A) to gather unpublished data on South Fork of the Salmon River steelhead.

ISRP Comments/Question: The proposal objectives change throughout.

Response: The words of the proposal objectives do vary from section 4 to section 8, but the variation in language does not affect the meaning of the proposal. As an example, Section 4 Objective 1 states, "Establish spawning ground index areas and summarize past data and studies." Section 8e Objective 1 states, "Establish index areas and summarize past data and studies." Another example is Section 4 Objective 2 which states, "Determine the natural

spawning and life history of summer steelhead in selected streams in the South Fork Salmon River drainage." Section 8e states, "Determine the distribution, timing, and abundance of steelhead redds in the South Fork Salmon River drainage". In the first example it is understood that index areas refer to the spawning grounds. The second example is a case where they began describing the objective in general terms in Section 4 and then refined the objective in Section 8 to be more specific. The variation in wording does not affect the basic meaning of objectives 1 and 3. Future proposals will be edited to ensure exact wording of objectives is maintained throughout the document.

ISRP Comments/Question: No summary of past data (i.e., the Thurow study) is presented. The genetic analysis is superfluous and is unlikely to produce samples that are representative of all parts of the population due in part to sampling difficulties because of water conditions during spring runoff. While it may be worthwhile to compare genetic profiles of the South Fork steelhead today to those of 1985, what specific assumption of hypothesis is the genetic analysis testing? Similarly, while it might be worthwhile to obtain a genetic profile of the S Fk South Fork steelhead using various state-of-the-art DNA technologies, as well as to archive DNA samples for future access as new technologies develop, this effort is probably only worthwhile only if it is part of a statewide or region-wide program to assess patterns of genetic diversity in Snake Basin steelhead in order to address specific questions related to conservation management or metapopulation structure. The proposal should be refocused to test specific hypotheses about the past sample, possible impacts of introgression with specific hatchery strains (if applicable), or it should be a necessary part of a larger genetic inventory of steelhead populations in Idaho pointed at identifying logical conservation units.

Response: The project sponsors disagree with the ISRP comment that the "genetic analysis is superfluous and will not be useful." As stated in Objective 3 in Section 8e, they intend to isolate the 23 enzyme system alleles previously isolated. The intent is to replicate Thurow's methods and compare the samples collected in 1984 and 1985 to samples collected in 2000. The objectives and tasks associated with juvenile monitoring were not recommended for funding by the CBFWA SRT due to an overlap in effort with proposal 9005500 and were to be dropped from the study proposal.

The proposal acknowledges that water conditions may not allow collection of a representative sample of adults. However, a limited amount of genetic information from adults would have been useful when compared to genetic sample obtained from juveniles. The adult samples will complement Idaho Fish and Game's proposed collection of juvenile steelhead state-wide for genetic purposes (Project #9005500). The genetic samples collected from adults would be most useful if sampling was accomplished state- or region-wide, but given the concerns over representative sampling it would not be wise to propose this task without accomplishing the task in a sub-basin first. Additionally, it is not wise to wait on the collection of genetic samples from adults given the historic decline of salmonid stocks in the Columbia River basin.

ISRP Comments/Question: Has no life history work been conducted on the South Fork Salmon steelhead? If not, this should be documented in the proposal as justification for the proposed work.

Response: There has been limited life history work conducted in the South Fork Salmon River. The main focus of the recent work has been on parr densities as conducted by the Idaho Salmon Supplementation Studies and General Parr Monitoring. Monitoring parr densities cannot accurately correlate to adult escapement due to the unknown proportion of South Fork Salmon River steelhead passing over Lower Granite Dam and yearly variation in egg to parr survival.

ISRP Comments/Question: The lack of specific hypotheses and clear objectives lead the reviewers to judge that the proposal in not based on sound science. The proposal, background and objectives are flawed and should be better developed. The overall objective of monitoring status of the steelhead population in the South Fork of the Salmon is worthwhile and consistent with objectives in the FWP. If the proponents choose to resubmit this proposal in FY 2001, the literature background work should be completed and integrated into a more sharply focused proposal that develops specific testable hypotheses based on the 1980s background data.

Response: The basic premise of this proposal is to establish baseline data on the status of steelhead within the South Fork Salmon River. Very little historical data is available. The proposal does attempt to expand on the one study done to date on steelhead in the South Fork Salmon River. The information to be collected will be critical in future management decisions and its collection should not be delayed.

**Project: 20080 Evaluate a Modified Feeding Strategy to Reduce Residualism and Promote Smol**
Sponsor: Idaho Fishery Resource Office, U.S. Fish and Wildlife Service

CBFWA tier: 1
ISRP review: Do not fund, technically inadequate. More attention needs to be paid to experimental design.

ISRP Comment/Question: This project is directed to the problem that some steelhead released at Dworshak Hatchery do not emigrate. The hypothesis is that manipulation of steelhead feeding levels during the winter prior to release will result in a greater proportion of the population leaving the system after release. The authors propose to test the prospect that their treatment groups (which are not identified) will experience differing capabilities for adaptation to saltwater.

Response: The treatment groups are 1) controls that are fish of the same fish take, reared under routine Dworshak steelhead rearing protocols; 2) treatment fish are from the same egg take to eliminate genetically based variability, and are reared under the same rearing conditions, with the exception of the altered feeding strategy. The proposed reduced feeding schedule for winter is based on the following calculations. Monthly Inventory Summaries for the past ten years were reviewed and standard hatchery measurements used to calculate the following (monthly) for the specific rearing system from the time of ponding until release: 1) specific growth rate per month; 2) g feed fed/g fish; 3) mean fish lengths, weights, and condition factor; and 4) temperature. Hatchery records of physiological data also exist for this period (Maule et al. 1994; Beeman et al. 1990, 1991; Rondorf et al. 1989). The specific growth rates by month were graphed and correlated to pond temperatures to determine the lowest growth rate the Dworshak stock attained during individual months over ten years under known temperatures. This was assumed to be a self-limiting feeding characteristic of the stock under the standard rearing protocol that uses demand feeders. The records revealed that the smallest release groups had high adult returns. Stocking densities, mortality, water temperature, and feed type, as well as disease treatments and outbreaks were considered in the initial data exploration. Based on the ten-year record, no significant difference in stocking densities of the ponds was expected barring major mortality due to disease; therefore, the standard hatchery ponds may be considered experimental units.

The proposed study was previously tested in a preliminary investigation. In 1997-1998 this feeding method was applied to System II (reuse water) at Dworshak NFH. Feeding rate was modified to produce growth rates comparable to the lowest growth rates seen in System II during the previous ten years. A reduction in growth rate was achieved, and compensatory growth after the fish were returned to full rations resulting in fish of the same mean size in the treatment group at release. Saltwater challenges of the fish were not performed because Dworshak steelhead face a long emigration, and maturation during the emigration is known to occur, with smolt development proceeding as the fish emigrate. In the preliminary study, the smallest treatment fish migrated faster to Lower Granite Dam than large treatment fish or controls. Fish from each experimental group were transported to Marrowstone Marine Station for a 3-month seawater growth and survival period. Treatment fish showed the same growth rate, survival, and smolt development, based on increases in gill ATPase, as the control group. The preliminary study suggested that growth rate could be manipulated in isolation from other factors in a production level study.

Preliminary results were cited in the proposal under Section 4, Past Accomplishments, and are available in the proceedings from the 49th Pacific NW Fish Culture Conference. An interagency report will be completed in July 1999. At the time the proposal was prepared, final analysis of the preliminary study data had not been completed.

Laboratory experiments could not be designed to allow evaluation of proposed feeding strategies that would be predictive of performance in a production facility. Seawater challenges at the hatchery would not take into account the development that takes place in the river, whereas monitoring of the fish during the emigration would. Marking fish to allow recapture or detection at dams during the emigration would provide information pertinent to this stock that emigrates a long distance. The development of Dworshak steelhead during emigration has been documented in reports for comparison to the proposed study (Maule et al. 1994; Beeman et al. 1990, 1991; Rondorf et al. 1989). The combined record provides a large database of environmental, behavioral, and physiological variables that furnished the data for calculations to develop the proposal. This project was designed within the constraints of standard rearing protocols and production goals of DNFH, and considering the long emigration distance and time-in-

river of Dworshak steelhead. The ISRP assumed that the project sponsor did not consider techniques such as grading of fish. All literature was cited from the original literature and hatchery records review, but only references were used to develop the preliminary study design, not the methods that were dismissed as being ineffective. Grading has been used at DNFH, and is not considered a practical approach for such a large hatchery; it had previously been tested with no success DNFH. The ISRP assumes that other rearing variables were not considered.

ISRP Comment/Question: If that is a valid possibility, it should be tested before undertaking the expensive marking and release experiments included as part of the proposal.

Response: The managers do not believe that laboratory experiments could be designed to allow evaluation of proposed feeding strategies that would be predictive of performance in a production facility. Seawater challenges at the hatchery, for example, would not take into account the development that takes place in the river, whereas monitoring of the fish during the emigration would. The development of Dworshak steelhead during emigration has been documented in reports for comparison to the proposed study (Maule et al. 1994; Beeman et al. 1990, 1991; Rondorf et al. 1989).

ISRP Comment/Question: The authors can expect a troublesome management problem associated with changing densities in the rearing ponds. They neglect to describe how they will prevent rearing density from becoming an uncontrolled variable. Preliminary experiments should be conducted at the hatchery and laboratory to address the saltwater adaptation problem, and to explore methods for dealing with density and other variables such as pond location.

Response: The fact that densities change does not necessarily present a problem with smolt development. The project sponsors are aware of the effects of rearing density on the development of smoltification (Schreck et al. 1985). It is when rearing densities become too high that stress can influence physiological processes associated with smoltification. At Dworshak NFH, Density Index at release is usually between 0.15 and 0.25, well within the range of the low to medium indices tested by Schreck et al. (1985). No need to control rearing density so that it remained constant was noted in the proposal. Maintaining a constant rearing density in the control ponds would not constitute a true production control since densities at Dworshak NFH are not kept constant.

ISRP Comment/Question: The proposal is inadequate in that it seeks a dietary, hence physiological, solution to a problem that may be primarily behavioral, and ignoring behavioral matters that would confound the experiments. In their research design, the proponents appear to ignore important material cited in their own narrative in Section 8a (Tech. Sci Background), which brings up behavioral aspects. For example (p. 10, lines 6-10): “Hatchery practices can have a significant influence on the parr-smolt transformation process [refs], and need to be developed based on knowledge of how they directly influence the growth, physiology, and behavior of steelhead leading up to and during smoltification.” They go on to state (p. 10, lines 24-27) that “a review of the literature indicates that high variability in size (length) within a juvenile steelhead population is in part a product of social interactions, and the establishment of dominant and subordinate individuals, where dominants grow faster than subordinates . . .” But the proposal addresses merely the overall growth rate of the population, not its variability, and therefore misses the point. Moreover, the sponsors do not acknowledge in their design that growth, physiology, and behavior are not independent of each other. The proposal is written as if growth rate could be manipulated in isolation.

Response: Maybe the managers were not as clear in the objectives as they should have been, but all of the objectives were developed to examine the variability in smoltification within the treatment and the control populations. The point of the research is to increase the proportion of fish that smolt, specifically, the proportion of smaller fish within the treatment population. It has been the intention from the beginning to look specifically at the smaller fish less than 170mm in the treatment and control groups and compare their performances in terms of survival during outmigration and adult returns.

ISRP Comment/Question: The authors ignore the traditional hatchery procedure of occasional “grading” (sorting by size with simple, sieving jigs) to separate socially dominant, faster growing fish from the “runts,” which results in faster growth of the latter. They fail to consider that this alone might solve the problem, obviating elaborate and possibly much more costly dietary manipulations in hatchery practice and physiological measurements in the proposed research. Even more importantly, they fail to consider that manipulating diet without grading the fish may be futile.

Response: Grading is used at some hatcheries to solve the problem with differential growth within a population. Smaller fish are graded out, reared separately to size, then released. Grading as a possible solution was not addressed because it does not really solve the problem. In the proposal, data is cited which shows that as many as 25% of the steelhead at Dworshak NFH less than 170 mm are not interrogated at downriver dams. This means that most of the fish less than 170 mm are interrogated at the dams. If grading occurs, these fish are lost as well. The point is that smoltification is not completely a size dependent event. Grading only addresses the size issue.

Grading of fish to achieve more uniform size has been considered at Dworshak NFH. For a facility of this size, it is not a practical alternative. The present study was design within production level operating limitations, using standard hatchery feeding equipment (demand feeders). Tagging was also used and is proposed to be coordinated with existing marking programs for the production facility. This includes coded wire tags for adult return data, and coordination with existing PIT-tagging. Personnel and available PIT-tags are used at no cost, and are augmented by the purchase of additional tags to provide enough PIT-tagged fish for detection at lower river dams. Coordination of the study with the existing hatchery and marking program provides great savings in personnel, feed, and marking costs. Estimation of detection rates at lower river dams is based on years of marking programs at Dworshak. The same type of information would also be available at other hatcheries.

ISRP Comment/Question: The proponents are “promoting the idea,” as they put it, “that the real need is to. . .” (page 10, lines 14-15). This suggests a preconception, which may rule out consideration of the full spectrum of reasonable possibilities. This runs counter to the unbiased inquiry that is necessary in experiments

Response: The “pre-conception” criticized by the ISRP was based on ten years of hatchery records and would be more constructively viewed as calculations of expected performance based on that record. The proposed study was previously tested in a preliminary investigation. In 1997-1998 this feeding method was applied at Dworshak NFH. Feeding rate was modified to produce growth rates comparable to the lowest growth rates seen during the previous ten years. A reduction in growth rate was achieved, and compensatory growth after the fish were returned to full rations resulted in fish of the same mean size in the treatment group at release.

Review of ten years of Dworshak hatchery data documents how much variability may be expected under standard rearing protocols. Any difference among treatment and control groups must exceed the inherent variability of among hatchery ponds, but careful monitoring of individual ponds during the study will provide information. Three methods of assessing growth and performance were compared to allow discussion of inventory methods at hatcheries. Growth is being considered in the context of known patterns of physiological and behavioral development at the hatchery. The strategy would need to be tailored to the specific species and stock, and hatchery conditions at other facilities, but hatchery records provide the necessary size, mortality, feed, and temperature data to calculate expected variability in any of the measurements proposed. Length frequency distributions are available from the preliminary study for each month.

ISRP Comment/Question: The Methods section neglects to describe the need for buying a digital camera or laptop computer and software, nor is the need explained in the narrative on budget. The travel allotment of $7,500 is not justified.

Response: The digital camera and laptop computer are for wet laboratory and field data logging of length, weights, and PIT tag numbers, and reflectance measurements at release and during the emigration (of PIT-tagged fish). Reflectance measurements (non-invasive, non-lethal) have a significant correlation to gill ATPase measurements (an invasive sample) in steelhead (Haner et al. 1995, Maule et al. 1994). Interrogation by code facilities at Little Goose Dam allow recapture and re-sampling of individuals for repeated sampling. The number of dams encountered and the distance traveled would be considered in data analysis.

Travel costs were described in the budget narrative. “Budget includes travel between Dworshak NFH, Cook Lab, and Marrowstone Field Station for sampling and transfer of experimental groups; daily travel of biologist and technician between Dworshak NFH and Little Goose Dam over a 3 to 4 week period to collect PIT-tagged smolts for estimating smolt development after release; travel and per diem for fisheries technician during 8-10 weeks re-location to Marrowstone Field Station to assist in extended seawater rearing.”

Travel costs include transportation and lodging for the technician at the dams for sampling during the emigration. Monthly sampling at the hatchery during the spring would require travel for the fishery biologist for physiological sampling, but is a price- worthy alternative to hiring additional personnel for the field tasks. It is difficult to get part-time, temporary personnel for the remote sites.

References:

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Maule, A. G., J. W. Beeman, R. M. Schrock, and P. V. Haner. 1994. Assessment of smolt condition for travel time analysis. Annual report 1991-1992 (Contract DE-A179-87BP35245) to Bonneville Power Administration, Portland, Oregon.

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Schreck, C.B., R. Patino, C.K. Pring, J.R. Winton, and J.E. Holway. 1985. Effects of rearing density on indices of smoltification and performance of coho salmon, *Oncorhynchus kisutch.* Aquaculure 45:345-358.

**Project: 20081 STOI Wildlife Land Acquisition And Enhancements.**
Sponsor: Spokane Tribe of Indians

CBFWA tier: 2
ISRP review: Do not fund. The proposal does not adequately justify the priority of the land to be purchased or the restoration activities. Poorly prepared proposal.

ISRP Comments/Question: Do Not Fund. The proposal does not adequately justify the priority of the land to be purchased or the restoration activities.

Response: In the CBFWA Wildlife Caucus, this proposal was identified as a tier 2.

The Spokane Tribe of Indians Wildlife Program had identified at least 8 parcels of land totaling 1338.5 acres. The proposal was developed, as a programmatic approach due to the fact that these parcels were identified; however, there is a possibility these lands may not be there once funding might be secured 18 months later. Restoration activities are hard to outline on a particular parcel, because the project sponsors are not exactly sure which parcel will be available for purchase and what exact restoration or enhancement will be needed by the time a particular parcel will be purchased.

After the Wildlife Caucus ranking, the Spokane Tribe was not anticipating funding for FY2000 for this particular project. The project sponsors realize a few things need to be changed on next year's proposal for FY2001, and next year they will be writing a better proposal for mitigation on lost habitat.

**Project: 20082 Rainwater Wildlife Area Operations & Maintenance**
Sponsor: Confederated Tribes of the Umatilla Indian Reservation

CBFWA tier: 1
ISRP review: Delay funding until they provide more information on the priority of the project within the watershed, and more details on monitoring and evaluation.

ISRP Comment/Question: Delay funding until they provide more information on the priority of the project within the watershed, and more details on monitoring and evaluation.

Response: The Rainwater property was prioritized by the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) through the CTUIR Columbia River Basin Wildlife Mitigation Plan developed over a course of two years. The Final Publication was completed in October 1998 and is on file with the Bonneville Power Administration (BPA) and CTUIR DNR Wildlife Office. Acquisition prioritization occurred through an extensive public outreach effort with the Tribal General Council and CTUIR tribal leaders during development of the Mitigation Plan. The General Council and Board of Trustees recognized the significance of a large, contiguous land parcel with land and water capable of providing dual benefits for both fish and wildlife.

The CTUIR acquisition of the Rainwater property permanently protected 8,441 acres in the headwaters of the South Fork Touchet River subbasin. The land abuts existing protected areas including the Mill Creek Watershed, Wenaha-Tuccannon Wilderness, and Washington State Department of Natural Resource lands. The property contains known and/or suspected populations of several threatened, endangered, and sensitive fish and wildlife species including threatened Walla Walla River Basin summer steelhead trout and bull trout as well as suitable habitat for eight of the eleven John Day and McNary target wildlife mitigation species.

The CTUIR maintains that the protection of this property was and is a technically defensible undertaking that will contribute significantly towards achieving the goals and objectives of the NPPC Fish and Wildlife Program. Past land uses have degraded portions of the property. However, protection and a combination of both passive and active restoration can and will encourage healing and ultimately the quality and quantity of resources the Tribes', agencies' and public's desire.

ISRP Comment/Question: The monitoring and evaluation program does not appear to be well planned.

Response: CTUIR staff previously provided a detailed monitoring and evaluation (M&E) outline to the Columbia Basin Fish and Wildlife Authority on April 14, 1999. The M&E outline will be provided to NPPC under separate cover.

**Project: 20084 Protect And Restore The North Lochsa Face Analysis Area Watersheds**
Sponsor: Nez Perce Tribal Fisheries/Watershed Program

CBFWA tier: 1
ISRP review: Delay funding until the monitoring and evaluation plan is better described and a qualified fluvial geomorphologist is included on the project team. A comprehensive review of all habitat restoration activities in the Clearwater basin is needed.

ISRP Comment/Question: Delay funding until the monitoring and evaluation plan is better described and a qualified fluvial geomorphologist is included on the project team. A comprehensive review of all habitat restoration activities in the Clearwater basin is needed.

Response: A Clearwater Subbasin Peer Review Group/Advisory Committee is being developed by the Clearwater Sub-basin Focus Watershed Program led by the Nez Perce Tribe (NPT) and the Idaho Soil Conservation Commission (ISCC). The Clearwater Sub-basin Focus Watershed Program will coordinate the activities of this committee. The cooperating agencies will include the Idaho Division of Environmental Quality, US Forest Service, Bureau of Land Management, Bureau of Indian Affairs, Nez Perce Tribal Fish Commission, Nez Perce Tribal Water Resources, Idaho Fish & Game, Washington State University (WSU), Idaho Department of Lands, Potlatch

Corporation, Plum Creek Corporation, and private landowners. The responsibilities of this committee will include participating in prioritizing watersheds and restoration projects, discussing cost-sharing options, information dissemination, and technical review. The Clearwater Technical Advisory Committee follows direction of the NPPC's Columbia River Basin Fish and Wildlife Program, Section 7.7A.1, Coordination of Watershed Activities. This committee is being developed as part of FY1999 activities.

A comprehensive assessment of the Clearwater River Subbasin is currently underway and will be completed in June 2000. The NPT and the ISCC are the lead agencies on the project. The Center for Environmental Education at Washington State University is the subcontractor responsible for conducting the Clearwater Subbasin Assessment. The Clearwater Subbasin Peer Review Group/Advisory Committee will oversee and contribute in completing this effort as guided in Section 7.6C Coordinated Habitat Planning, Watershed Assessment, of the NPPC's Columbia River Basin Fish and Wildlife Program.

The Protect and Restore the North Lochsa Face Analysis Area Watersheds project was initiated after the initial round of project prioritization in the Clearwater Subbasin, as part of the Early Action Watershed Program. The initial prioritization process was started with the completion of the Clearwater River Subbasin Salmon and Steelhead Production Plan in 1990. The plan included limited discussion of habitat problems, focusing largely on supplementation goals within the subbasin. Numerous watershed assessments (largely focused on 5$^{th}$ field USGS HUCs) have been completed in the Clearwater Subbasin since the 1990 plan. These have been used, where available, to refine the prioritization of activities within watersheds. The priority activities in the plan and more localized assessments were refined and prioritized by the Nez Perce Tribe and the U.S. Forest Service. Projects were selected by NPT for implementation with funding made available through NWPPC Early Action Watershed Program. This project is clearly needed and has been identified through a multi-phase prioritization process that includes the only existing basin-wide plan, more recent assessments, and further refinement by staff in both the Forest Service and NPT.

The Nez Perce Tribal Fisheries/Watershed Program's road obliteration work is performed under a Challenge Cost-Share Agreement with the CNF. Through this agreement, the CNF and the Nez Perce Fisheries Program share technical support as needed. CNF support for this project includes their Road Obliteration Coordinator (Annie Connor, Civil Engineer), a hydrologist (Jed Simon), and a geomorphologist (Dave Middleton). Furthermore, the Nez Perce Fisheries/ Watershed Program is currently contracting with Washington State University (WSU) on watershed assessment work. As a part of this collaboration, WSU has put together a technical advisory committee to provide oversight and technical assistance for the watershed restoration projects, including road obliteration. This technical advisory committee will continue to exist in the future and will be expanded to include the Clearwater Subbasin Peer Review/Advisory Committee. WSU personnel presently include the Center for Environmental Education Director (Darin Saul, Ph.D.), professors from the Department of Civil and Environmental Engineering with expertise in hydrology (Thanos Papanicolaou, Ph.D., Michael Barber, Ph.D., P.E., Rollin Hotchkiss, Ph.D., P.E.), and faculty from Biosystems Engineering (Shulin Chen, Ph.D., P.E.).

ISRP Comment/Question: The proposers should have provided a reference, and some hard numbers showing sediment yield for the basin as compared with other comparable basins that have not been subjected to the same land use history.

Response: The North Lochsa Face Analysis Area (NLFAA) is approximately 128,000 acres in size and consists of eight sub-watersheds. With the exception of the Fish Creek/Hungry Creek watersheds, these watersheds have been impacted by human land use management practices including logging and road building, resulting in excessive sedimentation and riparian destruction of critical salmonid streams (CNF, 1997). Because of their limited management and land use history, the Fish Creek /Hungry Creek watersheds serve as a reference for comparison with the Pete King/Canyon Creek watersheds. Both reference areas are within the NLFAA and have been chosen for their close proximity to each other, similar land characteristics, and size.

Clearwater National Forest produced a draft NLFAA Biological Assessment (BA) in 1998. According to the BA, the sediment yield in Pete King/Canyon Creek is 29.5% above natural conditions. The sediment yields for Fish/Hungry Creek are 0% above natural conditions. This difference indicates greater sediment yield in the watersheds with more intensive human management and land use. The Columbia River Anadromous Fish Restoration Plan of the Nez Perce, Umatilla, Warm Springs, and Yakama Tribes (Spirit of the Salmon) gives a target sediment delivery of less

than or equal to 20% over natural conditions (CRITFC, 1995). The sediment yield of 29.5% in the Pete King/Canyon Creek watersheds is significantly greater than the target value. The ultimate goal of the project is the obliteration of 96.9 miles of unstable roads within the NLFAA, in order to decrease sediment delivery into streams and tributaries.

ISRP Comment/Question: First, insufficient information has been provided to show that retiring ten miles of roads will result in significant sediment load reduction. Why the ten miles specifically picked?

Response: In the North Lochsa Face Analysis Area (NLFAA), a total of 96.9 miles of roads need to be obliterated in order to reduce chronic sediment loading into critical anadromous salmonid spawning and rearing areas. The roads chosen for obliteration are based on their stability and potential for mass wasting. While identifying these roads, consideration is given to access for recreation, fire, and forestry. During the 1996-1998 seasons, 25.7 miles were obliterated successfully, leaving 71.2 miles of road still in need of removal. No obliteration is to be performed in 1999. In 2000, the program chose an additional ten miles of road for obliteration because it considered a reasonable amount of work in the context of the other projects currently being implemented. The Clearwater National Forest (CNF) plans to match this target by obliterating ten miles, for a total of 20 miles during 2000. Currently, NPT and CNF plan to obliterate a total of 20 miles (10 tribe, 10 CNF) each year until all necessary obliteration is complete. At the current rate, the remaining 71.2 miles of road obliteration will be completed by 2004. The number of miles completed per year may increase if resources and opportunity present themselves. Accelerate the road obliteration program is planned to further decrease sediment and mass wasting potential before another major event occurs.

Road obliteration will begin in the headwaters, working downstream, initially dealing with the most unstable road systems. Road obliteration focuses on stabilizing unneeded roads and reducing potential sediment production into streams from mass wasting. In order to evaluate road-related sediment delivery from mass wasting, the watershed must be subject to a significant triggering event. In 1995-96, such an event occurred when precipitation in the Clearwater River drainage reached nearly 200 percent of normal (CNF, 1997). As a result of the 1995-96 episodic event, 68 total failures were recorded in the Pete King/Canyon Creek watersheds. Of the 68 total failures, 57 (or 83%) were road related. Approximately 19,930 cubic yards of sediment was produced by road-related failures (CNF, 1997). Clearwater National Forest estimates that approximately 40%, (7,972 cubic yards) of this volume was actually delivered to steams. In contrast, the Fish/Hungry Creek Watershed (which has limited road construction) had zero road-related failures during this period.

Although exact quantitative results are impossible to predict in advance, monitoring on a partially road-obliterated watershed on Pine Creek within the CNF during the 1995-1996 major flood events provides information that indicates road obliteration in this area will reduce mass failures and sediment delivery into streams. In the Pine Creek Watershed, 15.3 miles of road were planned for obliteration. Prior to the 1995-96 major flood events, 5.3 miles of road had been obliterated and ten miles had not been completed. None of the roads obliterated in Pine Creek failed during the floods; however, on the ten miles of road where obliteration was not completed, 19 major fill failures occurred. At least half of the failures delivered material to stream bottoms (Personnel Communication, Annie Connor – CNF Road Obliteration Coordinator).

Additional support for this project exists in the literature. Annual sediment yield data accumulated over 30 years from forested areas in the western Cascade Range in Oregon demonstrate that watersheds with road construction significantly increase mass wasting. Specifically, Grant and Wolff (1991) found that sediment yield from watersheds with roads averaged 21,000 tons/km$^2$ versus only 800 tons/km$^2$ from forested control areas. While clear-cutting accounted for 5,100 tons/km$^2$ of the increase, most of the 21,000 tons/km$^2$ was attributable directly to roads.

ISRP Comment/Question: Second, it appears that some of the methods proposed (i.e., removing culverts, regrading steep slopes) could well make the problem worse rather than better.

Response: Road obliteration may produce some short-term sediment delivery to headwater streams, both when stream crossings are removed and during spring runoff. This short-term sediment delivery is minimal in contrast to the total amount of fill present in roads not yet obliterated. Because road obliteration is a ground disturbing activity, several mitigation measures are taken as needed to prevent damaging levels of sediment from entering streams. Every road has different levels of obliteration needed, and for this reason, mitigation measures taken are site-specific. Mitigation measures include any combination of the following:

1. Placing removable sediment traps on the downstream side, below the project prior to obliteration work to trap fines, which are left in place until the project area has stabilized. Once this has occurred, the trapped sediment is removed to an area where it will not impact the stream.
2. Using drainage or diversion pipe in wet areas where necessary, or when removing large fills.
3. Re-vegetating all scarified and disturbed soils with grasses for short-term erosion protection and with shrubs and tree sprigs (willows, cottonwoods) and clump planting for long-term soil stability.
4. Utilizing erosion control mats on perennial and ephemeral stream channel slopes and slides.
5. Mulching with native materials where available, or using weed-free straw, to ensure coverage of exposed soils.
6. Constructing rock or log weirs to dissipate energy in the newly constructed stream channels.
7. Armoring channel banks and dissipating energy with large rock whenever possible.
8. Coordinating obliteration activities to avoid spawning times and location.

Between July 13 and July 28, 1998, an extremely sensitive obliteration location on the West Fork of Squaw Creek was monitored for sediment delivery to the stream. The monitoring location was approximately one mile in length and included 40-year-old rotting log cribbing that supported the road over the stream, several cross-drain channels, and a blown-out stream channel needing reconstruction. Silt fences were installed in live tributaries to minimize sedimentation as much as possible. During the obliteration project, two automatic sediment samplers were installed to determine levels of suspended sediment and turbidity. One of these samplers was located upstream of the project site for control purposes and the other located immediately downstream of the road obliteration project to measure impacts on sedimentation. The monitoring showed a delivery of 0.2 cubic yards of sediment and no increase of turbidity over the 13-day period needed to obliterate this section of road. The managers believe this to be a worst case scenario for the NLFAA due to the extremely degraded condition of the road and its close proximity to the West Fork of Squaw Creek (a fish-bearing stream). None of the proposed roads will require the same level of obliteration activity. Using the figure of 0.2 cubic yards per mile and the 71.2 miles proposed for obliteration gives a maximum (worst case scenario) of approximately 14 cubic yards of material delivered to fish-bearing streams. This potential load is extremely small when compared to the 41,260 cubic yards of possible sediment delivery from unobliterated road fills.

Measuring sediment delivered from road obliteration activities is a component of the Road Obliteration Program Effectiveness Monitoring Plan being conducted by the Nez Perce Fisheries/Watershed Program and the Clearwater National Forest. This monitoring began in 1998 and will continue into 1999 and all future project years. This monitoring program focuses on direct sediment delivery to streams, surface erosion, possible effects of mulch on erosion, bank stability, erosion control blanket effectiveness, and re-vegetation. The results from the 1998 monitoring show that the obliterated roads are generating very little sediment as a result of surface erosion from obliterated roads (Preliminary monitoring conclusions, 1998). Mitigation measures, including sediment fences and stream diversions, are controlling direct sedimentation, and mulch and erosion control blankets are working well to minimize surface erosion and enable quick and successful re-vegetation (Preliminary monitoring conclusions, 1998).

ISRP Comment/Question: Is there sufficient expertise on the project team to assure that the medicine won't be worse than the disease? As a minimum, the project needs to include a well-qualified fluvial geomorphologist. Supervision by an Engineer-In-Training is not sufficient.

Response: As stated at the beginning of this document, the Nez Perce Tribal Fisheries/Watershed Program's road obliteration work (among other projects) is performed under a Challenge Cost-Share Agreement with the Clearwater National Forest (CNF). Through this agreement, the CNF and the Nez Perce Fisheries Program share technical support as needed. CNF support for this project includes their Road Obliteration Coordinator (Annie Conner, Civil Engineer), a hydrologist (Jed Simon), and a geomorphologist (Dave Middleton). Additionally, the Nez Perce Fisheries/Watershed Program currently is contracting with Washington State University (WSU) for watershed assessment work. As a part of this collaboration, WSU has put together a technical advisory committee to provide oversight and technical assistance for other projects, including road obliteration. Personnel from WSU presently include the Center for Environmental Education Director (Darin Saul, Ph.D.), and professors from the Department Civil and Environmental engineering (Thanos Papanicolaou, Ph.D. and Michael Barber, Ph.D, Rollin Hotchkiss, Ph.D., P.E.), and faculty from Biological Systems Engineering (Shulin Chen, Ph.D. P.E.).

ISRP Comment/Question: The methods to be used for M&E (objective 2) are not explained in nearly enough detail. Pre and post monitoring must include measurement of sediment loads, but sediment tends to be disproportionately affected by a few small intense storms. How will the ensuing problems of statistical significance be resolved?

Response: The effectiveness and success of the project will be documented by two monitoring and evaluation (M&E) projects. The first M&E project focuses on road obliteration effectiveness. This project was initiated in 1998. The second M&E plan will address the issue of long-term fish population recovery and is currently under development. This plan will be coordinated with the umbrella monitoring and evaluation plan currently being developed by the NPT co-coordinator as part of the Clearwater Focus Watershed Program (part of FY99 activities).

The Road Obliteration Effectiveness Plan is implemented in cooperation with the Clearwater National Forest (CNF) and was initiated in 1998. This plan was developed as a guide for monitoring obliteration treatments. It involves monitoring and evaluating 5% of all road obliteration that has taken place in the forest. One-fourth mile monitoring segments are established in a variety of areas with different characteristics, concentrating on the most difficult road obliteration sites. Information collected includes cross-sections, pebble counts, vegetative growth, erosion control blanket installation, photo points, mass failures, surface erosion, weir installation, slope stability, and mulch. The M&E process will occur for a minimum of two years and a maximum of five years or until it is determined that no additional significant changes will occur. This monitoring and evaluation will identify on-the-ground road obliteration techniques and practices needing refinement, locate any additional maintenance or follow-up work, and monitor sedimentation from obliterated roads. This plan will allow maximization of the benefits of adaptive management and continued improve of overall road obliteration success.

The second monitoring and evaluation plan is currently in development and deals with long-term effects over time. The cleaning and flushing of excess sediment loads through streams and tributaries is a long-term process with many variables, and for this reason this will be a long-term program. The first step is to determine the limiting factors to be monitored for watershed and fisheries values. The impacts of sediment on habitat functions necessary for spawning and rearing life stages of healthy fish populations with be the focus of this plan. This project will include, at a minimum, monitoring sediment yield, cobble embeddedness, percent surface fines, percent fines by depth, turbidity/suspended sediment, pebble counts, and stream cross-sections. An extensive inventory will be made of mass failures and their causes throughout the analysis area after any large precipitation events. The data monitored will be evaluated for trends and possible conclusions on road obliteration and its overall impact upon fisheries habitat health.

The Clearwater National Forest collects much of the necessary monitoring data and has for many years. The plan will incorporate this historical and contemporary data, and then fill the gaps necessary for a complete monitoring plan. For comparison, data is planned to be obtained from restored watersheds, heavily impacted watersheds, and relatively pristine watersheds. The data collected will be analyzed for trends and any conclusions that may be used to improve the road obliteration program.

It must be understood that large episodic events lead to mass wasting from road related sources in steep forestland, such as the North Lochsa Face Analysis Area. Consequently, the watershed must be subject to a significant triggering event before the success of restoration efforts can be adequately evaluated (Williams, 1997). Since no major events have occurred subsequent to road obliteration activities, other than the previously discussed Pine Creek Project, it is too early to determine whether restoration has succeeded or failed.

Each of the monitoring plans will be adapted based on peer review from the Technical Advisory Group and to integrate with the umbrella monitoring evaluation plan being developed by the NPT co-coordinator during FY 1999.

ISRP Comment/Question: Another concern is why this project should not be paid for by USFS, which apparently built the roads in question. If these roads are the source of the problem, certainly they must have a financial liability.

Response: This comment is not a scientific comment but rather a policy comment. Earlier in the process this was already determined to not be an “in lieu” issue by CBFWA when they gave this proposal a Tier 1 rating and a funding recommendation. It is the understanding of the managers that the ISRP is to evaluate each proposal’s technical merit on a scientific basis, not to make policy level comments. Volume II, page 2, number 3 of the report

of the ISRP provides the seven different steps of criteria developed for evaluating the proposals, and none the criteria allow for this ISRP comment.

All of the road obliteration projects are in watersheds with critical anadromous and resident fisheries values and where BPA funds are already being spent. The Nez Perce Tribal Fisheries/Watershed Programs Road Obliteration Program and the Clearwater National Forest are combining efforts to accelerate restoration and recovery within these areas through a Challenge Cost-Share Agreement. This cooperative arrangement has resulted in significant accomplishments that far outweigh the accomplishments that could have been achieved through individual efforts. BPA funds, in effect, leverage a 100% matching effort from the CNF. The ultimate result of this effort is improved fish habitat and salmon recovery.

ISRP Comment/Question: Finally, while it appears that the project will wind down by the end of five years, the reviewers could not find a definitive statement of project duration.

Response: In the North Lochsa Face Analysis Area (NLFAA), there are 96.9 miles of roads to be obliterated. During the 1996-1998 seasons, 25.7 miles have been obliterated, with no obliteration to be performed in 1999, leaving 71.2 miles of road to be obliterated. This schedule has been developed in coordination with the CNF with the objective of obliterating a total of 20 miles (10 tribe, 10 CNF) each year until completion, with the process beginning in 2000. According to this schedule, 71.2 miles of road obliteration would be completed by 2004. Road obliteration will begin in the headwaters, working down, focusing first on the most unstable road systems. The number of miles per year may increase if resources and opportunity present themselves. It is the hope of the program to accelerate road obliteration progress to further decrease sediment and mass wasting potential before another major event occurs.

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**Project: 20086 Rehabilitate Newsome Creek - S.F. Clearwater River**
Sponsor: Nez Perce Tribal Fisheries/Watershed Program

CBFWA tier: 1
ISRP review: Delay funding until priority of activities is justified and a fluvial geomorphologist is included on the project team. A comprehensive review of all habitat restoration activities in the Clearwater basin is needed.

ISRP Comment/Question: Delay funding until priority of activities is justified and a fluvial geomorphologist is included on the project team.

Response: The Nez Perce Tribal Fisheries/Watershed Programs road obliteration work (among other projects) is performed under a memorandum of understanding with the Nez Perce National Forest (NPNF). Through this agreement, the NPNF and the Nez Perce Fisheries Program share technical support as needed. NPNF support for this project includes the knowledge of a Road Obliteration Coordinator from the Clearwater National Forest (Annie Conner-Civil Engineer), a Hydrologist (Jed Simon), Nick Gerhardt, Nez Perce Forest hydrologist and a Fluvial Geomorphologist (Dave Littleton).

The Nez Perce Fisheries/Watershed Program currently is contracting with WSU on watershed assessment work. As a part of this collaboration WSU has put together a technical advisory committee to provide oversight and technical assistance for the other projects including road obliteration. This technical advisory committee will remain in the future and be extended to include other affected and interested parties from the list on the first page. Personnel from WSU presently include the Center for Environmental Education Director (Darin Saul, Ph.D.), and professors from the Department of Civil and Environmental Engineering (Thanos Papanicolaou, Ph.D. and Michael Barber, Ph.D., P.E.).

ISRP Comment/Question: A comprehensive review of all habitat restoration activities in the Clearwater basin is needed.

Response: A watershed restoration plan is being completed by the Nez Perce Tribe and the Nez Perce National Forest. This prioritization plan is based on the South Fork Landscape Assessment document referenced in the project proposal. Within the assessment, sediment and simplified habitat were both identified as key limiting factors in aquatic recovery. This document identifies the key limiting factors and gives us the direction to begin addressing the issues in the watershed. There is also a Newsome Creek Watershed Assessment that is ongoing and is slated for completion in December of 1999. This document will further define information found in the landscape assessment and reinforce the conclusions discussed in the landscape assessment.

A Clearwater Subbasin Peer Review Group/ Advisory Committee is being developed by the Clearwater Sub-basin Focus Watershed Program (led by the Nez Perce Tribe (NPT) and the Idaho Soil Conservation Commission (ISCC)). The Clearwater Sub-basin Focus Watershed Program will coordinate the activities of this committee. The cooperating agencies will include the Idaho Division of Environmental Quality, US Forest Service, Bureau of Land Management, Bureau of Indian Affairs, Nez Perce Tribal Fish Commission, Nez Perce Tribal Water Resources, Idaho Fish & Game, Washington State University (WSU), Idaho Department of Lands, Potlatch Corporation, Plum Creek Corporation, and private landowners. The responsibilities of this committee will include participating in prioritizing watersheds and restoration projects, discussing cost-sharing options, information dissemination, and technical review. The Clearwater Technical Advisory Committee follows direction of the NPPC's Columbia River Basin Fish and Wildlife Program, Section 7.7A.1, Coordination of Watershed Activities. This committee is being developed as part of FY99 activities.

A comprehensive assessment of the Clearwater River Subbasin is currently underway and will be completed June 2000. The NPT and the ISCC are the lead agencies on the project. The Center for Environmental Education at Washington State University is the subcontractor responsible for conducting the Clearwater Subbasin Assessment. The Clearwater Technical Advisory Committee will oversee and contribute in completing this effort as guided in Section 7.6C Coordinated Habitat Planning, Watershed Assessment, of the NPPC's Columbia River Basin Fish and Wildlife Program.

ISRP Comment/Question: With respect to Proposal 20086, one curious aspect is that mining activities are identified at the beginning of the project description as a key source of habitat degradation. Yet, it is not clear that the project will really address those problems.

Response: Mining activities have negatively impacted habitat and rearing segments along Newsome Creek. In 1997, a sediment trap was installed on Haysfork Creek to reduce sediment generated from the major gloryhole (open pit) mine located in the watershed. Mining activities within the watershed are being addressed in the proposal through

the reclamation of stream reaches altered by historic mining activities. However, the reclamation portion of this proposal focuses on completing an assessment and feasibility study of options to reclaim degraded reaches and carry out in-stream habitat improvement. Addressing historical mine related impacts is an important part of the ongoing project but sufficient planning has not yet been completed for implementation projects. Road related sedimentation is also a priority in this watershed, and can be addressed at this time. The project will proceed by addressing the upper watershed first and then working down the watershed to do rehabilitation and protection of the streams after problems in the uplands have been addressed. Restoring downstream spawning gravel's or other habitat without first controlling the sources of excess sediment would be an ineffective strategy. During the current years' proposed field activities, additional information will be collected to enable effective project planning for projects in future years. The current project will focus on road obliteration.

ISRP Comment/Question: Objective 3, "Design channel rehabilitation …" would appear to be relevant, but there is no mention in the methods section that anything specific would be done – the focus seems to be primarily on the road issue.

Response: A number of roads have already failed releasing large amounts of sediment to stream reaches in the Newsome Creek drainage. Objective 3 of the current proposal permits us to prioritize the channel sections and complete a feasibility study on the viability of channel restructuring and cost. However, no channel design will be completed within this funding period. The channel rehabilitation is part of the goals but will not be attempted during this funding cycle.

ISRP Comment/Question: Insufficient information has been provided to show that retiring the roads specified will result in significant sediment load reduction.

Response: Newsome Creek Watershed consists of 42,576 acres composed mostly of highly erosive granitic soils. Out of a total of 220 miles of roads in the watershed, 136 miles of roads are located on high subsurface erosion prone soils. Out of this total of vulnerable miles of roads, approximately 85 miles are being evaluated for obliteration. As of this date there has been no obliteration within the watershed. Roads have been prioritized for removal. This prioritization has been reviewed by multiple departments with minor changes. Road segments were chosen for obliteration because they are located in high-risk reaches. This is determined by evaluating four factors; 1) proximity to streams, 2) land type setting, 3) slope position, and 4) slope class. Treatment of those roads is determined on sight by road obliteration inspectors from the forest service and tribe. The amount of miles completed each year may increase as resources and opportunity presents themselves.

The basic erosion rates within the Clearwater Subbasin have been calculated and converted to specific areas using different conversion factors. Roads in the Idaho Batholith are assumed to have basic erosion rates based on sediment data from a "standard" maintained 16-foot native material road with ditch (Megahan 1974 and personal communication). Basic road erosion rates are modified by the geological erosion factor and multiplied by the disturbed area of the road prism segment. The road prism used in this context is the total area disturbed including subgrade, cut and fill slopes, ditches, berms, turnouts, and any other constructed features when present. The surface erosion calculation for Newsome Creek varies due to specific land types and road information but generally the calculation found .52 tons/mile/year. This gives us a 5.2 tons/year of surface erosion over 10 miles. Although it is unlikely that all the material could potentially be delivered to the streams within the analysis area, the potential exists within the watershed.

Although exact quantitative results are impossible to predict in advance, monitoring on a partially road obliterated watershed on Pine Creek within the CNF during the 1995-96 major flood events provides information that shows that road obliteration in this area will work to reduce erosion and sediment delivery into streams. In the Pine Creek Watershed, 15.3 miles of road were planned for obliteration. Prior to the 1995-96 flood events, 5.3 miles of road had been obliterated and 10 miles had not been completed. None of the roads obliterated in the watershed failed during the floods, while on the 10 miles of road where obliteration was not completed 19 major fill failures occurred. At least half of the failures delivered material into the stream.

Measuring sediment delivered from road obliteration activities is a component of the Road Obliteration Program Effectiveness Monitoring Plan being conducted by the Nez Perce Fisheries/Watershed Program and the Clearwater

National Forest. This same monitoring program will be used to measure the effectiveness of road obliteration in the NPNF. This monitoring began in 1998 and will continue into 1999 and all future project years. This monitoring program focuses on direct sediment delivery to streams, surface erosion, and possible effects of mulch on erosion, bank stability, erosion control blanket effectiveness, and re-vegetation. The comments from the 1998 monitoring show that the obliterated roads are generating very little sediment as a result of surface erosion from obliterated roads (Preliminary monitoring conclusions, 1998). Silt fences are controlling direct sedimentation, and mulch and erosion control blankets used in obliteration are working well in minimizing surface erosion and enabling quick and successful re-vegetation (Preliminary monitoring conclusions, 1998).

Nationally, road obliteration annual sediment yield data accumulated over 30 years from forested areas in the western Cascade Range in Oregon demonstrate that watersheds with road construction significantly increase mass wasting. Specifically, Grant and Wolff (1991) found that sediment yield from watersheds with roads averaged 21,000 tons/$km^2$ versus only 800 tons/$km^2$ from forested control areas. While clearcutting accounted for 5,100 tons/$km^2$ of the increase, most of the 21,000 tons/$km^2$ was attributable directly to road construction.

The objective of road obliteration is to reduce the potential of roadway mass failures contributing large quantities of sediment to stream channels through landslides or debris torrents. The action of obliterating a road, however, may itself result in increased sedimentation if not done appropriately. Monitoring and evaluation, therefore, are done to assess impacts during implementation and to assess effectiveness thereafter. Roadway obliteration's may cause temporary adverse impacts but provide long-term protection from catastrophic sediment inflows (Grant and Wolff, 1991).

Monitoring and evaluation for implementation purposes starts before any roads are removed, regraded, or altered. Candidate sites for obliteration includes segments with inslopes, failing subgrades, and fills over drainages (either served by a culvert or simply drained by seepage). Prior to removal of fill from any drainages, three cross sections will be established along each crossing drainage where fill will be removed: one upstream, one at the roadway crossing, and one downstream. An automatic water sampling device (such as made by ISCO) should be installed both upstream and downstream from the roadway in the drainage path to collect water and sediment samples prior to, during, and immediately after road obliteration. These data will provide a measure of the degree of aggradation or degradation in the flow path and any increase in suspended sediment load from the site. In addition, a sediment trapping structure should be installed downstream from the roadway in the drainage path. Such structures may be relatively simple, such as a silt fence or groups of woody debris placed to induce sedimentation in the pathway. Any structure should be removed following obliteration, since access to the site will be limited.

Pulling up fill from a drainage path exposes the remaining fill on both sides to increased erosion. Scour pins should be installed on both banks to measure the depth of scour induced by passing waters.

These monitoring and evaluation methods should continue for at least one year following road obliteration in order to include a snowfall and snowmelt season.

All mitigation plans should be committed to writing and field checked to ensure that the plan was followed. For example, were the seed mixes and erosion control items applied as planned?

Monitoring stations on the downstream receiving water ("live" water) should be established before roadway obliteration, and particle size distributions and cobble embeddedness should be evaluated. These data should be collected once per year for about five years following road obliteration. Since it is difficult to attribute changes in these data to a specific roadway obliteration effort, additional data should be collected at the obliteration sites. These data include descriptions of ground cover as it becomes established and characterization of all rills and gullies that form after obliteration. Additionally, for each flow crossing, sediment transport should be evaluated by resurveying the cross sections and profiles that were established for implementation monitoring (if accessible).

ISRP Comment/Question: Why the particular road segments?

Response: Road segments are selectively chosen based on the four following factors: 1) proximity to the streams, 2) land type setting, 3) slope position, and 4) slope class. This is a program that has been developed by three divisions

of the Nez Perce Forest including the fisheries division, transportation planning, and hydrology. Treatment of those roads is determined on site by road obliteration inspectors from the forest service and tribe.

ISRP Comment/Question: Specifically, there is a real possibility that the road work could make the problem worse rather than better, and it does not appear that the project team has the proper qualifications to undertake this work.

Response: This activity may produce some short-term sediment delivery to headwater streams both when stream crossings are removed and during spring runoff. This short-term sediment delivery is minimal compared to the total amount of fill present in roads not yet obliterated. Sediment delivery from obliteration is further reduced by the installation of silt fences on live streams below roads being obliterated, the planting of vegetation, and the placing of erosion control blankets on banks of perennial and ephemeral streams. Silt fences will be installed to prevent sediment delivery to streams below roads being obliterated. Silt fences reduce short-term sediment delivery from road obliteration practices. A silt fence is placed between the stream and the project prior to obliteration and left in place until the project area has stabilized. Once this has occurred, the trapped sediment is shoveled out of the silt fence to an area where it will not impact the stream. After road obliteration has taken place, all perennial and ephemeral streams are lined with erosion control blankets. The erosion control blankets minimize surface erosion until vegetation can establish. All areas disturbed by road obliteration are re-vegetated and mulched immediately with grasses and sprigging and clump planting when available.

Between July 13, and July 28, 1998, an extremely sensitive obliteration location on the West Fork of Squaw Creek was monitored for sediment delivery into the stream. The monitoring location was approximately 1 mile in length and included 40 year old, rotting cribbing that supported the road over the stream, several cross-drain channels, and a blown out live stream channel needing reconstruction. During the obliteration project, two automatic sediment samplers were installed to determine levels of suspended sediment and turbidity. One of these samplers was located upstream of the project site for control purposes and the other located immediately downstream of the road obliteration project to measure impacts on sedimentation. The monitoring showed a delivery of 0.2 cubic yards of sediment and no increase of turbidity over the 13-day period needed to obliterate this section of road. The project managers believe this to be a worst case scenario. None of the proposed roads will need this level of activity to obliterate. When using the 0.2 cubic yards per mile and the 71.2 miles proposed for obliteration, this gives a maximum (worst case scenario) of approximately 14 cubic yards of material delivered to fish bearing streams. This potential load is extremely small when compared to the 41,260 cubic yards of possible sediment delivery from unobliterated road fills.

ISRP Comment/Question: 1) There seems to be over-reliance on the Rosgen method. Project personnel should get second-opinions on their hydrologic/geomorphic approach from qualified fluvial (and watershed) geomorphologists of the non-Rosgen school.

Response: The rehabilitation plan of habitats in Newsome Creek will be based on hydraulic and geomorphological principles. For this purpose, several existing stream classification systems will be considered to determine an appropriate habitat enhancement approach. The most common stream classification systems to be considered are those developed by Newbury and Gaboury (1993), Schumm (1977), Montgomery and Buffington (1993), and Rosgen (1996)). While Schumm's classification system (1977) is limited to alluvial channels, the remaining approaches are applicable to all sediment materials. Montgomery and Buffington (1993) developed a classification system for alluvial, colluvial, and bedrock streams in the Pacific Northwest that addresses channel response to sediment inputs throughout the drainage network. According to this method, the stream types are differentiated on the basis of channel response to sediment inputs. On the other hand the Rosgen method (1996) is based on measurements of channel gradient, sinuosity, width:depth ratio, dominant channel particle size, and entrenchment. The main advantage of the Rosgen Method is that it includes several stream subtype criteria, which describe potential influences of channel change in fish habitats. Rosgen simply gives us a place to start to see how the data fits. There are also a number of bank stabilization handbooks and procedures adopted by various local and Federal agencies such as those developed by the Forest Practices Code of British Columbia Channel Assessment Procedures Guidebook, the King County Surface Water Management Group, and the US Army Corps of Engineers Waterways Experiment Station.

ISRP Comment/Question: 2) On p. 13—“health of the stream” cannot be measured by the proposed method. The proposers should better define what they are driving at and include biological factors.

Response: Stream “health“ is used to define the current state of sediment flux and overall stream stability. For example, if Newsome Creek was operating with a natural stream channel stability that was achieved by allowing the river to develop a stable dimension, pattern, and profile so that over time channel features are maintained and the stream system neither aggrades nor degrades, then it would be a healthy stream. Using this monitoring system a person can identify hydrological changes that can then be viewed to see if there are any land management activities that can be linked to changes in hydraulic function of the watershed. This is done by taking cross sectional data over an extended period of time at sights that are permanently located within the watershed. These sights can help to show changes in the channel profile, slope, and channel function. There will also be pebble counts done to show changes in bed material. The managers can also measure cobble embeddedness by measuring the amount of sediment stain in the substrate versus the non-stained portion. These activities will be used to monitor the streams over a period of time. However, if further information is needed to answer questions that this method does not provide, other methods will be added as needed.

ISRP Comment/Question: 3) The abstract mentions certain biological monitoring (“snorkel counts to document juvenile survival, and redd counts to document adult spawning success”), but such are not covered in the methods section—and the way they are expressed in the abstract leads one to believe the proposers probably don’t know what they are talking about. The monitoring and evaluation plans are inadequate.

Response: Snorkel counts involve criteria based on water depth, temperature, and visibility. Surveyors must have water depth deep enough to submerge a mask, but too shallow to float. These requirements allow the snorkel to view fish hiding beneath and behind objects. The next criteria is temperature. Generally, daytime surveys should be conducted when water temperatures exceed 9 degrees Celsius. Temperatures lower than 9 degrees tend to cause juveniles to hid during the daytime, which causes an underestimation in the populations. The final criteria is visibility. Researchers working the streams have recommended minimum visibilities ranging from 1.5 to 4 meters for underwater counts. After these criteria are addressed a surveyor will crawl upstream with a snorkel and wet or dry suit looking for juvenile and adult species and document numbers, distribution, species, and size.

Redd counts are completed to determine the number of spawning nests created by adult fish, both anadromous and resident. These counts are done accomplished by walking upstream looking for adults currently spawning or nests created by past spawning. Nests vary between species but are generally shaped similarly. The strategy to determine the species that created the nest is based on the time of the survey, size of the nest, and identification of any carcasses and/or adults within the spawning reaches.

ISRP Comment/Question:
4) P. 14, end of first paragraph—“The hydrological data [from the ‘Rosgen method’] will be used to create a good picture of what is happening within the watershed and help identify limiting factors within the watershed” (italics added). Limiting of what?

Response: The use of the term “limiting factors within the watershed” is designed to view hydrological changes that can then be used to determine which land management activities are linked to changes in hydraulic function of the watershed. Determination of "limiting factors" in the Rosgen approach is accomplished through a typology developed by analysis and experience on hundreds of streams from diverse hydrophysiographical regions in the US. The National Research council advocates the Rosgen method as long as the "identification of limiting factors' step" is taken to mean identification of factors, which prevent the re-establishment of pre-disturbance ecological conditions, rather than merely conditions, which limit salmonid production.

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**Project: 20087 Protect And Restore Mill Creek Watershed**
Sponsor: Nez Perce Tribal Fisheries/Watershed Program

CBFWA tier: 1
ISRP review: Delay funding until this project is scientifically and fiscally justified. The budget request is grossly in excess of the need. A comprehensive review of all habitat restoration activities in the Clearwater basin is needed.

ISRP Comment/Question: Delay funding until this project is scientifically and fiscally justified. The budget request is grossly in excess of the need. A comprehensive review of all habitat restoration activities in the Clearwater basin is needed.

Response: According to the South Fork Clearwater River Biological Assessment report by the Nez Perce National Forest (NPNF, April, 1999), Mill Creek has been designated a priority watershed for Steelhead and Westslope Cutthroat Trout restoration. Chinook salmon, bull trout and whitefish also inhabit Mill Creek. All tributaries are accessible to anadromous fish except Black George Creek, where a pure strain of westslope cutthroat trout resides.

Cattle grazing disturbance in the upper riparian zones of Mill Creek has caused changes in plant communities due to grazing and trampling of stream banks. Aerial photographs taken in 1990 of upper Mill Creek meadows indicate that less than 5 percent of riparian hardwood shrubs line the stream banks as compared to 80 percent in 1927 (Nez Perce National Forest, April, 1999).

The number one recommendation from the NPNF report (1999) is to develop a fencing plan in 1999 to restrict cattle access to the upper meadow reach along Mill Creek.

A Clearwater Subbasin Peer Review Group/Advisory Committee is being developed by the Clearwater Subbasin Focus Watershed Program, which is comprised of the Nez Perce Tribe (NPT) and the Idaho Soil Conservation Commission (ISCC). The Clearwater Subbasin Focus Watershed Program will jointly coordinate this committee and is planning for the first meeting in September. The cooperating agencies tentatively include: Idaho Division of Environmental Quality, US Forest Service, Bureau of Land Management, Bureau of Indian Affairs, Nez Perce Tribe Fish Commission, Nez Perce Tribal Water Resources, Idaho Fish & Game, WSU, Idaho Department of Lands, Potlatch Corporation, Plum Creek Corporation, and private landowners. The responsibilities of this committee will include prioritizing watersheds and restoration projects, discussing cost-sharing, performing information dissemination, and technical review. This Clearwater Subbasin Peer Review Group/Advisory Committee follows direction of the NPPC's Columbia River Basin Fish and Wildlife Program, Section 7.7A.1, Coordination of Watershed Activities.

A comprehensive review/watershed assessment of the Clearwater River Subbasin is currently underway and is targeted for completion in June 2000. The NPT and the ISCC are the lead agencies on the project, and Washington State University (WSU), Center for Environmental Education is the subcontractor for compiling data and technical and scientific review of the assessment. The Clearwater Subbasin Peer Review Group/Advisory Committee will oversee and contribute in completing this effort as guided in Section 7.6C Coordinated Habitat Planning, Watershed Assessment, of the NPPC's Columbia River Basin Fish and Wildlife Program.

ISRP Comment/Question: This particular proposal for Mill Creek identifies livestock damage to the stream as the primary problem, and fencing of the riparian corridor as the relevant response. Reviewers wonder whether Program funds of over $200k are necessary to construct three miles of fence.

Response: The $200K figure is the projected figure for out-year funding. The budget of $63,036 for FY2000 includes all budget line items. The actual cost of constructing just the three miles of fence will probably be around $12,000 ($4,000/mile).

The South Fork Clearwater River Landscape Assessment indicates that management activities such as grazing and road building have affected the stream and riparian process in the upper watershed. This watershed is considered a population stronghold for steelhead and westslope cutthroat trout, but the overall condition for this watershed is low. Therefore, additional restoration projects, such as riparian re-vegetation and road obliteration will be planned beyond the FY2000.

ISRP Comment/Question: The proposal includes several statements like “working with an overall watershed approach” (in the short description) and similar statements throughout the proposal. However, there isn’t much evidence in the objectives and methods that there will be any substantive coordination, and/or how the tasks relate to an overall vision of watershed restoration.

Response: This project evolved through a coordinated effort between the Nez Perce Tribe and the Nez Perce National Forest. The Nez Perce National Forest, through their South Fork Clearwater River Landscape Assessment, has identified Mill Creek as a high priority for aquatic restoration.

Watershed restoration, based on a watershed ridge-top to ridge-top approach, is the focus of this project. Restoration projects should begin in the uplands of the watershed, so that as one works down the watershed, problems from above are not affecting the work being done downstream. This riparian protection fencing project takes place in the uplands of the watershed, and will mitigate effects from cattle grazing.

A monitoring plan that measures the implementation effectiveness will be established. Tentatively, the monitoring and evaluation of the fencing project will: visually examine the banks protected by the fencing before and after the fencing installation to look for active erosion indicated by rills, trails, and gullies; assess vegetation coverage, root depth, and diversity before and following fencing along a “greenline transec” (a line near the water’s edge typically marked by continuous vegetation); monitor the generation of new growth about one meter bankward from the green line transect; and establish cross sections and a stream profile through the protected reach before fence installation and after.

Steps 1 – 3 will be done once or twice a year and the re-survey portion of Step 4 will be done near project completion, up to five years after fence installation. Since this project incorporates monitoring and evaluation from other on-going efforts in the watershed, this plan will incorporate the suggestions of the Clearwater Technical Advisory Committee. The project leaders will implement adaptive management strategies to help maintain cost-effectiveness of the overall program.

ISRP Comment/Question: The applicant also hasn’t described how bad the grazing damage is, i.e., what is the current condition of the channel and riparian zone?

Response: A Biological Assessment written by the USFS in 1998 states that cattle grazing is a significant annual disturbance in upper riparian zones, and has led to changes in plant communities due to grazing and trampling of stream banks. Aerial photographs taken in 1927 indicate that 80 percent of the stream banks in upper Mill Creek meadows were lined with riparian hardwood shrubs. In the same reach in 1990, riparian shrubs lined less than 5 percent of the stream banks. The riparian plant community currently consists of grasses and forbs.

Low gradient riparian areas along Upper Mill Creek have also contributed to reduced bank stability (documented in 1990 stream surveys). Mill Creek Meadows and the meadows located near the mouth of Corral Creek are heavily impacted.

The lack of riparian community contributes to increased water temperatures. Temperatures have been recorded at 21.5 degrees Celsius, which is 5.5 degrees above the suggested maximum temperature by the Northewest Power Planning Council for anadromous streams.

By fencing off the riparian zone, native riparian vegetation will be re-established. Studies will be conducted using historical photos, soil samples, and riparian studies to determine the historical native riparian vegetation was.

In a study in northeast Utah, substantial recovery of streambanks and vegetation has been observed following 4 years of exclusion of grazing by fencing. Woody plant recovery should occur within 5 to 8 years of livestock exclusion.

ISRP Comment/Question: Creation of a "riparian corridor" is mentioned, but there is no indication of how wide or long this corridor will be. How far from the creek will the fence be built?

Response: The riparian protection fence will exclude cattle from approximately one mile of stream within Mill Creek Meadows, located near the mouth of Corral Creek. The riparian buffer zone will be about one-quarter mile on each side of the stream. It is hoped that natural re- vegetation will occur within five years.

**Project: 20090 Logan Valley Wildlife Mitigation Project**
Sponsor: Burns Paiute Tribe

CBFWA tier: 1
ISRP review: Fund for one year. The ISRP recommends short-term funding for acquisition and further on-ground survey work. Subsequent funding for monitoring and evaluation contingent on development of a clear plan for monitoring and evaluation with criteria to evaluate efforts.

ISRP Comment/Question: Fund for one year. The ISRP recommends short-term funding for acquisition and further on-ground survey work. Subsequent funding for monitoring and evaluation contingent on development of a clear plan for monitoring and evaluation with criteria to evaluate efforts.

Response: The only ongoing evaluation efforts on the property are BPA Projects 9701900 and 9701901 conducting fisheries research. As the acquisition process continues, assistance will be provided to The Nature Conservancy for maintaining the property.

ISRP Comment/Question: The restrictions under the conservation easement should be better described.

Response: There is no conservation easement. This proposal indicates that this project is an acquisition.

ISRP Comment/Question: The proposal describes M&E to determine if desired results are achieved, but specific desired results are not given. What are they and how exactly will they be evaluated?

Response: The project sponsors have only limited access to the property. They can only speculate what the specific conditions are or can be. Once a HEP is conducted, information to identify the strengths and weaknesses of the habitat will be documented. The protocols will depend on the actions needed to restore or enhance existing fish and wildlife habitat.

**Project: 20092 Inventory Wildlife Species & Populations Of The Owyhee Basin, D.V.I.R**
Sponsor: Shoshone-Paiute Tribes of the Duck Valley Indian Reservation

CBFWA tier: 3
ISRP review: Fund for one year during which time the detailed project plan can be developed. Subsequent year funding contingent on a scientifically sound plan.

ISRP Comment/Question: Fund for one year during which time the detailed project plan can be developed. Subsequent year funding contingent on a scientifically sound plan.

Response: Based upon NPPC staff input and review of the Council's program, it was determined that there was no provision within the existing wildlife section of the program to fund this sort of activity. There has also been no request of this sort previously within the Basin.

ISRP Comment/Question: It is difficult to evaluate the project design, since that is one of the expect outcomes, and more information is needed on how progress will be evaluated.

Response: If funded, the project sponsor intends to have a monitoring and evaluation plan for all DVIR projects. The intent is to evaluate this wildlife project using the plan that will be developed through this project as well as project # 20040. The work would be included in the 5-year management plan for the DVIR.

**Project: 20094 Assess Resident Fish Stocks Of The Owyhee Basin, D.V.I.R.**
Sponsor: Shoshone-Paiute Tribes of the Duck Valley Indian Reservation

CBFWA tier: 2
ISRP review: Fund for one year during which time the detailed project plan can be developed. Subsequent year funding contingent on a scientifically sound plan.

ISRP Comment/Question: Information should be collected on all native fishes, not just salmonids.

Response: Information will be collected on all native fish. This portion must have been inadvertently left out of the proposal, but all species gathered will be documented.

ISRP Comment/Question: It would be useful to use sampling and assessment methods that are comparable with those used by state agencies, so results can be integrated basin-wide.

Response: It is the Tribes' intention to use methods that are comparable to state, federal, and tribal agencies in order to integrate results with the entire basin.

**Project: 20095 Evaluate Interactions Of American Shad With Salmon In The Columbia River**
Sponsor: U.S. Geological Survey, Biological Resources Division

CBFWA tier: 2
ISRP review: Fund for one year. Despite the proposal's shortcomings, the potential interaction of American shad with mid and upper river fall chinook salmon warrants examination. An objective of the proposed workshop might be to develop a more comprehensive ecological research program for future submission.

ISRP Comment/Question: The proposal would examine past collections taken in John Day Reservoir and not the lower reservoirs on the lower river where abundance of shad are many more times abundant.

Response: One of the reasons that John Day Reservoir was selected as a study site is that it is rather unique among the lower river reservoirs because it has the longest mean retention rate (7.3 d), which is important to pelagic fish, such as shad, and the zooplankton community that may support them. Juvenile fall chinook salmon have an extended residence time in John Day Reservoir compared to other lower river reservoirs (Nelson et al. 1993) and therefore the potential for interaction with shad is greater. This does not preclude high shad abundance in the lower river, nor diminish the need for research there, but existing data sets are more complete for this reservoir. Analyzing existing data and samples will keep costs down, and still provide answers as to the role of shad in the Columbia River.

ISRP Comment/Question: The proposal would analyze hydroacoustic and trawl data to identify distribution patterns of shad and juvenile chinook, but the interpretation of this data would be uncertain, particularly for purposes of

examining interactions between species; and the examination of stomachs of shad and chinook, to examine competition, is also of questionable value. For example, any observed overlap (or lack thereof) in diets of chinook and shad might be explained in many different but equally plausible ways. Little or no ovelap in diet might be the result of either total lack of competition for similar prey or from very intense competition for prey, where one species strongly out competes the other for that prey. The ecological implications of these two scenarios are very different, but there is no way to resolve which of many possible alternative explanations is correct.

Response: The nature of assessing competition between two species and the different interpretations that are possible is very complicated. However, the situation is not hopeless. Past studies on this topic have been successful in assessing competition based on diet overlap and segregation (Schultz and Northcote 1972; Werner and Hall 1977). Analysis of existing food habits samples and data will allow the sponsor to frame the "competition" question more appropriately, so that results from additional study can be interpreted correctly. The reviewer cites an example of diet segregation between chinook and shad, which indeed makes interpretation difficult. However, a result of diet overlap would provide a stronger case for potential for competition. At the present, a limited amount of information is available for migrant chinook food habits, and no information on shad food habits. Determining this information from existing data is a logical first step without going to the expense of a large field study, and will guide future efforts to elucidate competitive interactions between shad and chinook salmon.

ISRP Comment/Question: The proposed budget appears to be much too large for the deliverables expected. It is also not clear what the large sub-contracts are required to deliver.

Response: Inasmuch as USGS, Biological Resources Division is the primary research entity of the Department of Interior, the cooperation of the CRITFC and USFWS has been sought as management entities to provide a management prospective for all final products. The USFWS will be responsible for conducting a literature review (Task 1.a) and compiling existing data on American shad migration and passage patterns in the Columbia River basin (Task 1.b). They will also be responsible for adult shad passage work. Jim Stow of the USFWS has 18 years experience as a hydraulics engineer, 9 of which were directly related to fish passage. The CRITFC will be responsible for answering adult shad harvest questions (Task 2.a, 2.b, and 2.c) and organizing a workshop on shad in the Columbia River (Task 3.a). Dr. Tom Backman of CRITFC was the Principle Investigator and Project Leader for an American shad research program at the National Research Laboratory (USFWS) in Wellsboro, PA (Backman 1989, 1992, Backman and Bennett 1993, Bennett and Backman 1993). The USGS will be responsible for the analysis of data on juvenile shad and for the delivery of all products.

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**Project: 20097 Phalon Lake Wild Rainbow Trap Improvements and O&M**
Sponsor: Washington Department of Fish and Wildlife

CBFWA tier: 2
ISRP review: Delay funding until proposers justify why they are using a single source of fish for stocking and address potential consequences of this on the genetic characteristics of native populations. Encourage resubmission in another year. As a set, the Roosevelt Lake hatchery proposals need to address and monitor potential impacts on native biota.

ISRP Comment/Question: This is a new proposal to take over a trap facility for obtaining spawning stock of rainbow trout.

Response: This is not a new proposal. It was submitted several years ago, but was placed in Tier 2 due to funding limits. The proposal was not described as a request to "take over" a trap facility; it was described as a project to construct a facility that does not now exist. Currently, egg collection is accomplished by use of an Oneida Lake trap that is set each spring to capture mature redband rainbow for egg taking. The success of this operation is totally dependent on surface water temperature. The trap floats at the water's surface. As the surface water temperature rises above 59°F, egg survival and/or egg viability decreases to zero. This reduces the ability to produce fish in the numbers possible relative to the numbers of eggs potentially available. Additionally, the strictly passive nature of the trap's operation does not allow for the full utilization of the adults in the lake.

ISRP Comment/Question: Although the group liked the idea of replacing stocking of coastal rainbow trout with local redband rainbow trout, the proposal should consider the potential negative effects of using a single source of fish for stocking on the genetic characteristics of native populations.

Response: The source of the redband stock is not a single source. Replacement fish are taken from up to nine tributaries of FDR Lake. These tributary stocks have been identified by genetic analysis to be 100% redband rainbow. As more tributary stocks are identified as pure redband they will surely be candidates for use in this project.

The coastal stock of rainbow now being released into FDR Lake via the netpen project has shown a desire to migrate through Grand Coulee Dam during drawdowns for flood protection and facility maintenance. Tags from marked rainbow have been recovered from as far downstream as the mouth of the Columbia River. This could very well imply a potential negative genetic impact to many native Columbia River stocks. It has been claimed that the current hatchery stock of mostly coastal rainbow are fall spawners and cannot mix with native spring spawners. This is not true. The spawn timing of the Spokane Hatchery stock of rainbow has been manipulated through selection of early spawners for nearly 60 years to spawn in December. This was done so that fry releases from this stock coincided with the following year's spring zooplankton blooms. This arrangement was created to accommodate the need to provide an efficient and inexpensive recreational fishery in lakes. Fish that survive natural and harvest mortality to maturity will spawn in the spring like most other native rainbow stocks.

ISRP Comment/Question: There would be obligations for construction and operation in the future, however. There is a good background and rationale for the use of native trout in supplementation. There is construction as well as O&M. The exact facility and equipment is left unclear.

Response: The design phase ($25,000) is intended to determine future funding requirements. Construction will include acquisition of electrical power to the site. Estimates by Avista indicate this cost to be $20-$25,000. The trap and associated pumping equipment will require the remaining $100,000.
Prior to completing the design process, the concept for the facility includes a two-chambered concrete trap and holding structure constructed of concrete. The trap side of the chamber will be equipped with a triangular shaped "throat" that allows entry to the trap but excludes exiting. There will be a ladder leading to the trap entrance from the lake. This will also be concrete. The second chamber will function as a holding pen for unripe fish.

The water source for the trap and holding pen will be pumped lake water. Due to the warming of lake surface watering the later weeks of the spawning operation, an intake will be suspended at the twenty foot depth to take advantage of the constant 50°F water temperature. This pump arrangement will require a fifteen horsepower pump and associated electrical supplies.

ISRP Comment/Question: The project seems to have been ongoing since 1996, but the proposal presents no project history.

Response: Page three, Section 4 of the project proposal identifies fish produced for the previous three years. In PART II-NARRATIVE, d. Project history (for ongoing projects), the project sponsor was led to believe that this item pertained to BPA funded projects. A brief history of the project is described in Section 8, part a. on page 6 of the proposal.

ISRP Comment/Question: There is confusion about funding history.

Response: There is no funding history other than the original donation of the Oneida Lake trap by local fishing clubs. Agency personnel have operated the trap under existing budgets.

ISRP Comment/Question: It (the project) is related to a project that monitor these fish, but what about monitoring the impact on other Fish?

Response: The Lake Roosevelt Monitoring Program (9404300) has the capability to do this. An initial pilot study to assess use of these fish in Roosevelt is actually being started this year (1999).

ISRP Comment/Question: There is no explanation of why and how they will increase from $26k (fish ?) To $500k (fish?).

Response: The ability to maximize adult capture and egg viability will serve to justify increasing the size of the brood population. A safe and effective trap facility that provides appropriate water temperature for egg ripening, and the ability to capture a majority of the adults, will allow for the increase in egg production.

ISRP Comment/Question: There is a weakly justified budget with little cross-correlation between objectives and costs.

Response: In Objective schedules and costs, 66.66% of the total proposed amount is needed to engineer and design the facility as well as to complete the NEPA and other permit requirements. It is difficult to break this down in relation to actual construction cost prior to having the results of the design process. This is a totally new facility. It does not now exist.
The remaining 16.7% of the cost is required to contribute to the operation of the Colville Hatchery where the eggs will be incubated, hatched, and reared prior to being transferred to net pens or other facilities for additional rearing as required.

**Project: 20100 Characterize Historic Channel Morphology Of The Columbia River: Mcnary Pool**
Sponsor: Pacific Northwest National Laboratory

CBFWA tier: 2
ISRP review: Do not fund. Programmatic value, benefits to fish are not explained.

ISRP Comment/Question: The relationship of this project to the Fish and Wildlife Program is not clear; however, if drawdown of McNary Dam is ever considered, it would have application.

Response: The proposal specifically identified individual Fish and Wildlife Program objectives that would be addressed by this study. Moreover, the proposal identified how the study is well aligned with ISG and ISRP recommendations. The following is extracted from the proposal in Section 8b, page 9, paragraph 2: "The objectives of the Fish and Wildlife Program (NPPC 1994, 1995) and recommendations by the ISG (1996) and ISRP (1998) contain several common themes relative to mainstem spawning and rearing habitat for fall chinook salmon and steelhead. FWP objectives 7.1A.1, 7.1C.3, 7.6A.2, 7.6D and 1995 Amendment 4.1A all target evaluations of mainstem habitat, limiting factors, and uncertainty reduction. This study will provide a quantitative description of historic channel characteristics, which are controlling factors for habitat conditions. The results will provide the baseline information necessary for determining what were alluvial reaches and what were not, as well as guideposts for identifying and evaluating mainstem habitat restoration options."

The possibility of operational modifications to McNary Dam (including drawdown) has been discussed openly in regional forums. The proposal sought, in part, to build on this discussion by developing some of the scientific information that is necessary for current and future decision making. The following is from the proposal in Section 8b, page 9, paragraph 1: "The ISG (1996) and ISRP (1998) have identified the need to protect and enhance mainstem spawning and rearing habitat for salmonids. Both groups also recommended evaluation of additional spawning and rearing habitat that may be made available in the event of operational modification or removal of lower Snake River dams, John Day Dam, and McNary Dam. The ISRP (1998) specifically indicated that such actions could prove most beneficial to spawning and rearing habitat of mainstem populations, and that, "Scientific information on this issue may be critical in supporting whatever decisions are made regarding modification of dams or their operations." The research conducted under this proposal will result in the scientific information necessary for evaluating historic habitat conditions, as well as for reducing uncertainty regarding the predictions of future mainstem habitat conditions following flow modifications.

ISRP Comment/Question: There is no mention of potential benefits to fish.

Response: The proposal identified general benefits to habitat diversity and salmonid life history strategies, as well as specific benefits to fall chinook. The discussion of these benefits is in Section 8a, page 7, paragraphs 1 and 2: "Construction of mainstem dams fragmented these populations by blocking the flow of colonists between the regional and local populations." (Lichatowich and Mobrand 1995). One concern is that elimination of both upstream and downstream source populations has increased the distance of the source pool of potential colonists (after MacArthur and Wilson 1967, Wilcox 1980). The ISG (1996) and ISRP (1998) have suggested that fall chinook spawning in the Hanford Reach are a core population that could serve to seed nearby mainstem habitats (i.e., McNary reservoir) and tributaries (i.e., lower Snake and lower Yakima rivers). Small satellite populations of fall chinook currently in the lower Yakima and Snake rivers could also expand into nearby mainstem habitats.

The creation of a reservoir system where a riverine system once existed has reduced habitat diversity and life history strategies, and resulted in synchronized life histories subject to the same stochastic and deterministic risks. The overall effect of these processes is a reduction in production capacity of the Columbia River Basin and an increase in risk that salmon populations will continue to decline unless restorative actions are taken to diversify mainstem habitats. The ISG (1996) and NMFS (1998) have suggested that operational modification (i.e., drawdown) of lower Snake River dams and McNary Dam could enhance mainstem salmonid habitats.

ISRP Comment/Question: Linkages with other projects are not discussed.

Response: The proposal described relationships of the proposed study to two other projects, specifically in Section 8c, page 9, paragraph 3: "This proposed project is based on a similar framework and methodology as ongoing work by PNNL in the lower Snake River being conducted for the Corps titled, 'Assessment of Drawdown from a Geomorphic Perspective.' Both projects will benefit from data and knowledge sharing, as well as knowledge of the river systems. The BPA has funded PNNL and USGS to complete a mainstem project titled, 'Assessment of the Impacts of Development and Operation of the Columbia River Hydroelectric System on Mainstem Riverine Processes and Salmon Habitats.' This is a coarse scale assessment, as the geographic extent of the project ranges

from Bonneville Dam to Grand Coulee Dam on the Columbia River, and from the mouth of the Snake River up to Twin Falls, ID. Nevertheless, that project and the proposed project will share data, knowledge, and experience in evaluating riverine processes."

ISRP Comment/Question: Assumptions are made that certain data sources exist. Investigators might readily have ascertained their availability, considering that Council staff is well informed on the subject, as are some others in the region.

Response: Many researchers in the region, including this manager, believe they are well informed on the existence of historic data sets for the Columbia Basin; however, ascertaining their availability is another matter altogether. The existence, availability, and quality of historic data are subjects wrought with difficulty, even for professional archivists. Indeed, in the period of time since writing the proposal this manager has acquired several high-quality data sets depicting historic (1880-1930) Columbia River characteristics – these are data sets that the U. S. Army Corps of Engineers, Seattle District, did not know existed in their holdings. Some of these data have already been incorporated into a GIS database at the Pacific Northwest National Laboratory.

ISRP Comment/Question: The adequacy of the model as proposed to be developed should be clarified, including identification of potential weaknesses and uncertainties that may or may not be addressed by this project.

Response: The manager is uncertain as to the reason for this comment. The project does not propose to develop a model. The proposal describes a study that is largely empirically-driven, through the reconstruction and analysis of historical data. The only "models" to be used or developed in this study are GIS data layers whose weaknesses and uncertainties reflect that data on which they're based. These weaknesses and uncertainties would be fully disclosed in accompanying metadata, as was described in the proposal at Section 8f, page 11: "These spatial data will be compiled into GIS data layers, edited, error-checked, and georeferenced. All GIS data layers will be accompanied by metadata complying with the Content Standards for Digital Geospatial Metadata created by the Federal Geographic Data Committee (FGDC)."

**Project: 20102 Research/Evaluate Restoration Of NE Ore Streams And Develop Mgmt Guidelines**
Sponsor: Oregon State University and University of Oregon

CBFWA tier: 2
ISRP review: Fund. This is an outstanding proposal, with a strong scientific basis, which should be given the highest priority for funding.

ISRP Comment/Question: Fund. This is an outstanding proposal, with a strong scientific basis, which should be given the highest priority for funding.

Response: Fish and wildlife managers in the NE Oregon/SE Washington subregional team (SRT) agree there is a need for the proposed research. A better understanding of the physical and biological responses to different restoration approaches in different settings is necessary; however, the project proponents have not adequately coordinated with fish and wildlife managers in the development of this project proposal. Only one SRT member knew of a brief contact from the project sponsor. This is a major flaw considering the fact that the study will require treatment and control streams. No one is more familiar with local stream habitat conditions, existing habitat enhancement projects, fish populations and existing project monitoring and evaluation than the SRT. Due to the lack of coordination among the fish and wildlife managers in this region, there will be no apparent benefit to fish and wildlife management by funding this project.

ISRP Comment/Question: This is a new proposal by an interdisciplinary group at Oregon State University and the University of Oregon to take a new look at habitat restoration protocols. The proposers argue that the $200 million spent to date on habitat restoration in the PNW has been largely unsuccessful, due to poor planning, absence of a scientific basis, and absence of post-project monitoring and evaluation. They propose to implement a set of long-term studies at an ecosystem restoration site in northeastern Oregon, at which background data required for assessment and improvement of habitat restoration activities could be undertaken.

Response: The proposed research appears to be focused on National Forest lands and higher elevation streams. Much of the current habitat restoration effort is taking place on mid- to low- elevation streams on private lands in this region. SRT members would like to work with the project sponsor to ensure the study provides results that will be most beneficial to the implementation of habitat restoration over a broad range of settings. The project will not benefit fish and wildlife if no coordination with management entities is pursued.

ISRP Comment/Question: The panel did feel that there should be more emphasis on information/technology transfer. An information transfer plan should be explicitly requested by the BPA COTR at the time of funding.

Response: While fish and wildlife managers do not support funding of this project in FY2000 due to the lack of coordination with project implementers, they would support funding of such a project in FY2001 provided the project sponsor coordinates the selection of evaluation sites with the local fish and wildlife managers and generally involve us in the development of the proposed project. Funding this project for FY2000 without coordination during project development, or hastily performed coordination, would not benefit the long-term usefulness of the project.

**Project: 20104 Sources Of Myxobacterial Pathogens In Propagated Salmonids**
Sponsor: Abernathy Salmon Culture Technology Center/U.S. Fish & Wildlife Service

CBFWA tier: 2
ISRP review: Do not fund, technically inadequate.

ISRP Comment: While proponents contend that cold water disease/columnaris have recently become important in hatcheries, the proposal offers little data, analysis, or citations to support the view.

Response: The primary support for the premise of this study comes from the Pacific Northwest Fish Health Protection Committee, the group that deals with current fish health problems in the Columbia basin. For the past four years bacterial cold water disease has been ranked by the PNFHPC as one of the top three problems in the region. This was referenced in the proposal. While there are no printed data or citations in peer-reviewed journals about the present impact of BCWD, support for this view can be found by talking to any hatchery manager of fish health specialist in the region.

**Project: 20107 Reconnect The Westport Slough To The Clatskanie River**
Sponsor: Lower Columbia River Watershed Council

CBFWA tier: 3
ISRP review: Fund with high priority.

ISRP Comments/Question: Fund with high priority.

The proposal does not describe in adequate detail, however, potential adverse side effects of the proposed action, limiting factors in the tributaries, and a summary of the Corps of Engineers engineering and environmental assessment efforts. This project should require a favorable environmental assessment and engineering plan before implementation.

Habitat restoration criteria are discussed only in general terms. Is it assured that naturally occurring fish populations from the Clatskanie would populate the Westport Slough? If so, over what time period? Would supplemental plantings be required? Would the release of built-up toxins and sediments from the slough affect water quality or aquatic biota in the river, and if so, with what result?

Are there other factors (other than the plugged slough) that lead the Clatskanie River to be on the 303d list? Do those factors limit the benefits of the proposed reconnection? Similarly, are the 24 miles of salmonid habitat in tributaries to the slough limited only by fish passage problems, or are there other water quality concerns? What is the basis for the statement (Page 9) that expected results will be improved water circulation and flow? Have flows

through the culvert/slough been estimated? Will fish movement through the culvert be possible? Has sediment transport modeling been done? Will flow through the slough be sufficient to mobilize sediments?

Response: It is confusing that the ISRP had significant concerns with this project, yet rated it with a strong recommendation for funding. The concerns raised by the ISRP were also considered by the Lower Columbia subregional team (SRT) during their review process, which resulted in a poor ranking among the projects proposed for this subbasin. The SRT uses consistent criteria to rank projects and this proposal failed to meet a significant number of those criteria. The SRT stands by its recommendation and agrees that this work could potentially provide benefits in this area; however, the SRT is assigned a limited budget and within this group of projects, this proposal is not identified as a management priority for FY2000 because of the numerous concerns identified by the SRT and the ISRP.

**Project: 20109 Cedar Creek Natural Production and Watershed Monitoring Project**
Sponsor: Washington Department of Fish and Wildlife

CBFWA tier: 3
ISRP review: Fund, OK for a multi-year review cycle with high priority.

ISRP Comments/Question: This is an excellent proposal, comprehensive and persuasive, and a logical candidate for long-term funding. The ISRP was impressed with this proposal and strongly recommends it for funding.

Response: The Lower Columbia sub regional team (SRT) agrees with the ISRP that this project proposal was well written and is a worthwhile project. The Lower Columbia SRT is limited by an inadequate budget, and when evaluated in the context of all the projects submitted within this subbasin, this project is not considered a management priority at this time.

ISRP comment: To meet Objective No. 5, would production of juveniles (supplemented) by, say, the modified Hankin and Reeves survey procedures (rather than by use of traps at three locations) yield more information on distribution and habitat?

Response: A combination of Hankin and Reeves survey with adult/juvenile trap information would yield more information than the traps alone. Outmigration traps are relatively expensive and represent 39 percent of the proposed budget (minus overhead). The first year of funding would be used to gather the production (escapement, smolt migration and parr yield) data, which are highly variable. In the second year, the funds allocated would be used to perform Hankin and Reeves habitat surveys. These habitat surveys, while important, are a lower priority because habitat is less variable than fish populations. After the habitat surveys are completed, an Ecosystem Diagnosis and Treatment type assessments procedure would be developed to guide future habitat restoration projects funded by private, state, and federal funds.

ISRP comment: A question arises with regard to the goal of monitoring fish stocks in Cedar Creek for the purpose of evaluating fish response to a large number of recently enacted measures to improve habitat, reduce harvest rates and foster genetic diversity. The monitoring should be effective in assessing the sum total of these actions, but it will be difficult to use the results in an adaptive management context, one that will enable them “to apply success(ful) strategies and not repeat our failures in other subbasins.”

Response: Since there is an urgency to restore wild fish populations, many dynamic fish recovery actions are undertaken simultaneously. The potential compounding of multiple effects of different actions is a reality for Cedar Creek and most subbasins in the Columbia River. So in many ways Cedar Creek is typical of most watersheds. The limits on proposal length did not allow enough space to address the reviewers concerns in this area. It is the intent of the proposers to use a multi-species approach to isolate the fish’s response to variable harvest, freshwater habitat, and genetic diversity measures in concert with a variable ocean environment. As the reviewer noted, the smolt to adult survival will be used to isolate the effect of a variable ocean environment and the reverse is true for freshwater, where escapement egg to smolt survival is indicative of improved freshwater habitat. The Hankin and Reeves habitat survey will provide a link between changes in freshwater production and habitat quantity/quality.

No supplementation will occur on cutthroat and steelhead, while coho salmon will continue to be supplemented. This allows evaluation of different hatchery strategies using different species. Hatchery cutthroat and steelhead populations have been adipose marked since the late 80's and early 90's and angling regulations require wild fish release. These fish are not commercially harvested and the catch and release mortality is less than 3 percent. Coho salmon are subject to commercial harvest and harvest rates are likely to be higher (15 percent or more) and WDFW will continue to monitor these rates. As mentioned above with the hatchery strategy, different species will be used to assess the population response to variable harvest rates.

By developing a science-based study design and using the appropriate sampling across mutispecies, some of the habitat, hatchery, and harvest variables will be isolated. It is unlikely this approach is robust enough to determine with absolute certainty the fish responses to individual actions but it should be sufficient enough to determine generalized responses to combinations of actions. The budget submitted for this work is based on this approach. If the Council desires a more robust study design for this type of work, the project sponsor would like the opportunity to expand this proposal.

**Project: 20112 Securing Wildlife Mitigation Sites - Oregon, Wenaha Wma Additions**
Sponsor: Oregon Department of Fish and Wildlife

CBFWA tier: 1
ISRP review: Fund for one year. Subsequent funding contingent on submission of a detailed and justified management plan. The acquisition portion of the proposal is fundable, but the management plan for operation and maintenance plan is inadequate.

ISRP Comment/Question: Remaining funds will be used to develop and implement assessment, restoration, operations and maintenance, and monitoring and evaluation plans, however these plans are not well developed or clearly justified.

Response: It is true that the habitat assessment, restoration, O&M, and M&E plans are not well developed at this time. This is because the properties of interest have not been acquired. Landowner negotiations are occurring and it is not yet certain that the proposed land acquisition and/or conservation easement will be accomplished. Once the lands are secured, existing habitat conditions will be assessed and a restoration plan will be developed and implemented. O&M and M&E plans cannot be developed until the restoration plan is known. The need for all of these plans is justified if benefits to wildlife from these properties are to be provided.

ISRP Comment/Question: The monitoring plan is particularly vague. What will be monitored and why? What will be the direct wildlife measures?

Response: As stated above, there are several tasks that must be accomplished prior to the development of a M&E plan. Thus, it is premature to know what exactly will be monitored. However, the Wildlife Caucus is currently in the process of developing a coordinated M&E program with standardized M&E protocols. This program (see *Current Status of Monitoring and Evaluation in the Wildlife Program – Report to the IRSP, July 1999, CBFWA Wildlife Caucus*) will be applied to this project.

**Project: 20113 Securing Wildlife Mitigation Sites - Oregon, South Fork Crooked River**
Sponsor: Oregon Department of Fish and Wildlife

CBFWA tier: 3
ISRP review: Fund (medium priority).

ISRP Comment/Question: Fund (medium priority).

Response: After review of the project, the Wildlife Caucus determined that the project scope was significantly different than that which was provided in the FY 2000 proposal. The project proponent withdrew the project for consideration in FY 2000.

**Project: 20114 Securing Wildlife Mitigation Sites - Oregon, Ladd Marsh WMA Additions**
Sponsor: Oregon Department of Fish and Wildlife

CBFWA tier: 1
ISRP review: Fund for one year. Subsequent funding contingent on submission of a detailed and justified management plan. The acquisition portion of the proposal is fundable, but the management plan for operation and maintenance is inadequate. Proposals for management and monitoring of wildlife mitigation land should be amenable to multiyear funding, but this would require a clear set of biological objectives (with justification), a specific plan for meeting them, and a description of a monitoring and evaluation plan that would allow assessing how well the plan was meeting objectives and whether particular management activities were successful, cost-productive, or otherwise justified

ISRP Comment/Question: The programmatic need for and value of the land acquisitions is made clear, but the management plan is not similarly justified.

Response: As explained in Section 8a of the FY 2000 project proposal, proposed restoration activities will restore a portion of the historic Tule Lake wetland complex. Much of the properties of interest is currently agricultural land. Implementation of a management plan to restore these areas to functioning wetlands will have substantive benefits to both fish and wildlife.

ISRP Comment/Question: Although much of this proposal is for land management, it cites no land management or restoration literature.

Response: As proposed, the USDA Natural Resource Conservation Service will be involved in this project through its Wetlands Reserve Program. In addition to providing funds for easement acquisitions and restoration work, NRCS will also assist in restoration planning, permits, and monitoring of work. ODFW staff with expertise in wetland restoration will also be involved. As mentioned in Section 8b of the FY 2000 project proposal, a restoration plan for the Ladd Marsh area developed by Ducks Unlimited in cooperation with the Governor's Watershed Enhancement Board, ODFW, NRCS, The Nature Conservancy, and the U.S. Fish and Wildlife Service will be used

ISRP Comment/Question: Why not remove, rather than alter, agricultural practices?

Response: As used in the FY 2000 project proposed, the altering of agricultural practices could very well mean the removal of such activity. To alter an activity does exclude ceasing the activity, it simply means to change the activity in some manner. Until habitat assessments of the properties of interest have been completed, we will not know the exact plan for management. Continued agricultural practice (at some level and for some period of time) may or may not be a part of the management plan.

ISRP Comment/Question: The monitoring plan is not adequate to establish success of the management, nor are clear and measurable objectives of the enhancement/management given.

Response: Several tasks must be accomplished prior to the development of a M&E plan. Existing habitat conditions will be assessed and a restoration plan will be developed and implemented. O&M and M&E plans cannot be developed until the restoration plan is known. The Wildlife Caucus is currently in the process of developing a coordinated M&E program with standardized M&E protocols. This program (see *Current Status of Monitoring and Evaluation in the Wildlife Program – Report to the IRSP, July 1999, CBFWA Wildlife Caucus*) will be applied to this project.

ISRP Comment/Question: The cost of acquisition is reasonable; one cannot judge whether the cost of O&M is reasonable without better presentation of work.

Response: This project is in the early stages. Land acquisition is nearing completion. After habitat assessment, restoration planning, and restoration implementation occurs, we will have a better idea of what O&M will be required.

**Project: 20115 Securing Wildlife Mitigation Sites - Oregon, Irrigon Wma Additions**
Sponsor: Oregon Department of Fish and Wildlife

CBFWA tier: 1
ISRP review: Fund for one year. Subsequent funding contingent on a better description of monitoring and restoration objectives and methods

ISRP Comment/Question: The monitoring program seems insufficient.

Response: The M&E program for this project is in its infancy. The property of interest may or may not even be acquired. If the land is acquired, several tasks need to be completed prior to development of a detailed M&E plan. Existing habitat conditions will be assessed and a restoration plan will be developed and implemented. O&M and M&E plans cannot be developed until the restoration plan is known. The Wildlife Caucus is currently in the process of developing a coordinated M&E program with standardized M&E protocols. This program (see *Current Status of Monitoring and Evaluation in the Wildlife Program – Report to the IRSP, July 1999, CBFWA Wildlife Caucus*) will be applied to this project.

**Project: 20116 Securing Wildlife Mitigation Sites - Oregon, Horn Butte**
Sponsor: Oregon Department of Fish and Wildlife

CBFWA tier: 1
ISRP review: Fund for one year. Subsequent funding contingent on a better description of monitoring and restoration objectives and methods

ISRP Comment/Question: The discussion of costs is not adequate to judge whether steps have been taken to assure that a reasonable price was paid for the property. In fact, it is not clear whether the property was purchased in FY 99, or negotiations are still underway.

Response: To clarify, the properties of interest presented in the FY 1999 project proposal have not yet been purchased or eased. Section 4 states that landowner negotiations began in 1998; land purchase or easement is not included in the list of past accomplishments since none was completed. Section 8d of the FY 2000 project proposal also discusses the FY 1999 proposal and progress made.

ISRP Comment/Question: The questions arises whether Phase II is needed or not. An explanation would help.

Response: The phrase “Phase II” was used to demonstrate that the FY 2000 project proposal is a continuation of the FY 1999 project proposal. In FY 2000, funds were requested for tasks associated with the properties of interest identified in the FY 1999 proposal and to ease or acquire more land in the Horn Butte area.

**Project: 20120 Evaluate Factors Limiting Columbia River Gorge Chum Salmon Populations**
Sponsor: U.S. Fish and Wildlife Service

CBFWA tier: 1
ISRP review: Fund with high priority.

ISRP Comments/Question: There is some concern that the principal investigators may be over-committed in absorbing this and other projects.

Response: Mr. Coley will have oversight on this and any other funded project. One of the other biologists will be responsible for basic project management, field crew supervision, and day-to-day operations. Additional crew will be responsible for trap operations, maintenance, and other duties as assigned.

ISRP Comments/Question: The U. S. Fish and Wildlife Service is presently conducting a watershed analysis of the Hardy Creek Basin. Does this work rate high priority in the assessment? Are watershed analyses in place for Hamilton Creek and the Grays River as well?

Response: The watershed assessment is critical to the determination of factors limiting chum salmon production in Hardy Creek. Conversely, this proposed study would complete the watershed analysis by examining limiting factors in the lower watershed. Watershed assessments have not been done for either Hamilton Creek or the Grays River.

ISRP Comments/Question: How will this project aid the Washington Department of Fish and Wildlife to restore chum salmon by using remote streamside incubators to reintroduce chum? Are chum to be taken out of the three creeks?

Response: Hardy and Hamilton Creeks are likely sites from which chum could be taken in efforts to restart chum salmon populations in Columbia River tributaries since they represent two-thirds of the chum salmon populations remaining in the Columbia River. Chum salmon have already been taken out of the Grays River population for use in chum salmon restoration efforts.

ISRP Comments/Question: One reviewer questions the value of data from the Hydrolab water quality probes, notwithstanding that intragravel water quality and substrate composition after emergence should be valuable parameters in assessing spawning success. Neither temperature, surface dissolved oxygen nor conductivity is likely to influence incubation success very directly.

Response: The project sponsors collect these parameters as standard data in the work to establish background conditions in the stream, and understand that they may not directly influence incubation success. The project sponsors are open to constructive discussions about the use and limitations of Hydrolabs as tools, but realize that they are less precise than some other methods of water quality monitoring.

ISRP Comments/Question: How will the investigators know if spawning habitat is saturated?

Response: Published chum salmon data provide valuable indications of the point at which saturation might be reached. The project sponsors expect that if they are able to examine enough variability in spawning populations' sizes, they will see a decrease in outmigrant abundance above a certain spawner abundance, which is the saturation point. However, the project sponsors may not see enough variability in a study of this duration to determine the saturation point.

ISRP Comments/Question: What if the numbers of spawning adults are good, but the numbers of out-migrating are low despite apparently good quality water and substrate? Are there contingency plans to investigate other possible limiting factors (e.g., an unsuspected contaminant) in the event their physical measurements do not explain the results of biological monitoring?

Response: The reason for the study is to determine those factors which limit chum salmon production. Therefore, if those factors which the project sponsors initially examine do not explain the results obtained, they will examine all other possible factors.

ISRP Comments/Question: What is the probability of success for the spawning channel?

Response: The spawning channel has a high probability of success. Similar spawning channels in Canada, Alaska, and Washington have been very successful. In fact, the majority of spawning in Hamilton Creek and the Grays River occurs in spawning channels. The proposed spawning channel has the advantage of drawing on the successes and failures of other spawning channels.

ISRP Comments/Question: The sample sizes of 10 males and 10 females for radio tracking is quite small, and one can anticipate that statistical precision of the proportions moving from one creek to another will be poor. Only the relative magnitude of movement will be known.

Response: The original sample size was determined by the cost of conducting a telemetry study. The project sponsors realize that they are limited by this sample size to determining the relative magnitude of chum movements. Sample sizes may be increased if budgets permit.

ISRP Comments/Question: Is not maintenance of flows over mainstream spawning areas crtitical, regardless of whether spawning habitat is saturated in Hamilton and Hardy Creeks, or when access to Hamilton Creek is limited by low flows?

Response: Indeed, maintenance of flows over mainstem Columbia River areas is important. However, it has been the project sponsors' experience that maintenance of these flows is very unpredictable due to the complexity of hydropower system operations. Sometimes, a good part of the spawning season passes before mainstem spawning areas are available. Furthermore, when spawning areas in the mainstem river are inundated, Hamilton Creek is accessible.

ISRP Comments/Question: No mention is made of a permanent mark for out-migrant juveniles that would permit testing of homing fidelity (though there is a hypothesis listed in Objectives that tags in chum salmon smolts will persist and be readable in returning adults). This discrepancy should be clarified.

Response: After thorough literature surveys, two potential marks may be used: strontium marking of internal bony parts and adipose clipping. The project sponsors will evaluate these marks to determine the best of these possibilities.

**Project: 20121 Evaluate Habitat Use And Population Dynamics Of Lampreys In Cedar Creek**
Sponsor: U.S. Fish and Wildlife Service

CBFWA tier: 1
ISRP review: Fund (high priority)

ISRP Comments/Question: The proposal notes the vital significance of Pacific lampreys and their tendency to be under-estimated, but does not adequately discuss other lamprey studies either in progress or proposed. Disappointingly, the proposal pledges only that this effort will complement those other activities. The question may then logically be raised: Is this proposal critical to the success of the other projects, or vice-versa?

Response: This proposed study is fully coordinated with, and would be conducted in full cooperation with, all other proposed or current Columbia River Basin (CRB) Pacific lamprey studies. The proposed project targets Pacific lamprey research priorities mutually agreed upon by all of the parties working with, or proposing to work with, Pacific lamprey, in the CRB. The study is proposed in a drainage with an intact native salmonid assemblage and which is not influenced by mainstem hydropower operation. As described in this proposal, less than half of adult Pacific lamprey attempting to pass Bonneville Dam actually achieve passage. This suggests that Pacific lamprey production in tributaries above Bonneville Dam may be limited by adult returns alone. All other proposed or current field studies which are attempting to determine lamprey population characteristics, habitat utilization, and limiting factors are examining these factors upstream of at least one mainstem Columbia River hydropower project. Therefore, this project is critical to the success of other Pacific lamprey projects because unless lamprey population characteristics, habitat utilization, and limiting factors are understood in a watershed not influenced by mainstem Columbia River hydropower operations, it will be difficult to interpret results of studies in upriver areas. Very specifically, this project relates to proposed or current projects in the following ways:

Pacific lamprey research and restoration projects CTUIR/CRITFC (BPA Contract 9402600). This project seeks to evaluate Pacific lamprey population characteristics, habitat utilization, and limiting factors in NE Oregon and SE Washington streams above at least three mainstem Columbia River hydropower projects, with the ultimate goal of restoring harvestable populations in the Umatilla River. This project is also providing genetic material and funding for a lamprey genetics survey conducted by the University of Idaho. Because they are coordinating fully with the sponsers of this project (CTIUR/CRITFC), both directly and through the Columbia Basin Pacific Lamprey Workgroup, they will be using the same methods in therespective projects. Therefore, the results of thestudy will provide a baseline dataset from a watershed not impacted by mainstem hydropower against which the results of the

CTUIR/CRITFC study can be compared. The results, especially regarding habitat use and rearing densities, will provide important data for the restoration efforts. Furthermore, under an existing agreement, they will provide genetic samples for the lamprey genetics survey being funded by the CTUIR/CRITFC study.

Evaluate status of Pacific lamprey in the Clearwater River drainage - IDFG (Proposed).
This project proposes evaluating Pacific lamprey life history and habitat requirements in the Clearwater River in Idaho. The Clearwater River is upstream of eight Columbia River and Snake River hydropower projects, and only 3% of the Pacific lamprey which migrate past Bonneville Dam are able to pass all eight of these hydropower projects. Because they are coordinating fully with the sponsers of this project (IDFG) through the Columbia Basin Pacific Lamprey Workgroup, they will be using the same methods in therespective projects. Again, the results of the study will provide a baseline data set against which the results of the IDFG study can be compared.

Upstream migration of Pacific lampreys in the John Day River - USGS CRRL (Proposed).
This project proposes evaluating Pacific lamprey life history and habitat requirements in the John Day River, which is above three mainstem Columbia River hydropower projects. Because they are coordinating fully with the sponsers of this project (USGS CRRL) both directly and through the Columbia Basin Pacific Lamprey Workgroup, will be using most of the same methods in the respective projects. Again, the results of the study will provide a baseline dataset against which the results of the USGS study can be compared.

Identification of larval Pacific lampreys (*Lampetra tridentata*), etc. - USGS CRRL (Proposed). This project proposes determining characteristics that differentiate sympatric larval lampreys by species. The project sponsors will be providing this project with lamprey specimens from Cedar Creek and from other streams as they collect them. They are already collaborating with CRRL on ammocoete rearing, aging, and tagging studies which benefit the proposed study as well as the other proposed and ongoing lamprey studies.

ISRP Comments/Question: The extent to which ammocoetes can be identified is a major uncertainty. The problem is clearly stated, but its importance may not be fully acknowledged. If only 61 per cent of ammocoetes were correctly classified in the most recent study, Objective No. 2 will be compromised where multiple species are present. Objective No. 5 could become a very substantial job in itself.

Response: The project sponsors fully understand potential problems associated with ammocoete identification. To address this uncertainty, they will randomly subsample ammocoetes captured as they evaluate ammocoete habitat use, distributions, and biological characteristics (Objective 2) and rear these to metamorphosis in the laboratory (Objective 5) so that identifications can be verified. By subsampling, they will be able to determine species composition accurately and yet will not have to rear large numbers of ammocoetes in the laboratory. Preliminary studies conducted in cooperation with USGS CRRL have shown that ammocoetes are relatively easy to rear to metamorphosis. Alternatively, if suitable genetic markers are found from initial studies which are currently underway at the University of Idaho, they will collect small, nonlethal tissue samples from ammocoetes to verify species identification. This procedure would allow us to forgo Objective 5 altogether. Therefore, they feel that these two objectives will be neither compromised nor too difficult to handle.

ISRP Comments/Question: If prevailing dogma is that lampreys do not home, and if downstream migrants are to be given CWT, it seems that a more broad-scale effort should be proposed to recover tags in returning adults.

Response: Whereas there is evidence that lamprey do not home, the project sponsors feel that lamprey homing should be evaluated further. Because they can easily and cheaply mark outmigrants with CWT, this tag can be used to evaluate trap efficiency for outmigrant population abundance as well as adult homing. Therefore, whereas a large-scale tagging project is beyond the scope of this project, they can evaluate homing to Cedar Creek. A large number of tagged lamprey recaptured as adults would be strong evidence of homing in Pacific lamprey. In the future, homing could be more thoroughly evaluated by a coordinated, large-scale tagging operation of which the Cedar Creek study could be a part.

ISRP Comments/Question: Regarding Objective No. 1, the estimation of adult lamprey abundance assumes that marked lampreys do not behave differently from unmarked lampreys, marked fish will try to re-ascend the falls, and marked lampreys suffer no greater mortality than unmarked lampreys. How will these important assumptions be tested so that unbiased results are assured?

Response: Some of these assumptions have already been tested as parts of ongoing laboratory studies at USGS CRRL. Adult Pacific lamprey marked with fin clips or with internal Passive Integrated Transponder (PIT) tags did not suffer significantly higher mortality than untagged lamprey. Current studies at USGS CRRL are evaluating swimming performance of Pacific lamprey tagged with a variety of tags. Data from these studies, combined with anecdotal data from recaptured lamprey in Cedar Creek, indicate no apparent difference in survival or behavior between tagged and untagged animals. All appropriate handling precautions will be made to reduce bias from handling and tagging procedures, however, the project sponsors fully understand potential bias may still occur and be undetected.

ISRP Comments/Question: Regarding Objective No. 2, will habitats not used by ammocoetes also be characterized, so that the project develops information about habitat preferences?

Response: As described in the proposal, the project sponsors will choose the sampling units based on available habitat types, not ammocoete presence or absence. Therefore, they expect to characterize the full spectrum of habitat use, from not used to most used.

ISRP Comments/Question: The total commitment of the principal investigators to this and other projects (ongoing and proposed) should be evaluated to determine if they are over-committed.

Response: Mr. Coley will have oversight on this and any other funded project. Another biologist will be responsible for basic project management, field crew supervision and day-to-day operations. Additional crew will be responsible for trap operations, maintenance, and other duties as assigned.

**Project: 20123 Restoration Of Sockeye Salmon Into Palmer Lake**
Sponsor: Salmonsoft

CBFWA tier: 2
ISRP review: Delay funding until adult sockeye passage at, or elimination of, the Enloe dam is reasonably assured. The project has high programmatic value.

ISRP Comment/Question: Only one year of pre-introduction monitoring of limnological conditions is planned.

Response: Additional limnological monitoring could be added to the project. However, the more time that goes by without any adult returns from the existing Cassimer Bar hatchery program, the more likely the project is to be terminated. There would be no cost share for Palmer Lake reintroduction if the Cassimer Bar sockeye program is terminated.

ISRP Comment/Question: The success of this project depends on the ability to separate sockeye released into Palmer Lake as fry or pre-smolts from the kokanee already living there. According to the proposal all fry and pre-smolts will be adipose clipped. However, the reviewers didn't see anything in the budget to cover the clipping cost. Returning adult sockeye will be trapped at Bonneville based on a visual mark, but we do not know what type of mark will be applied (V-I tag?). Correct fish identification is critical to this project, but we are not provided with enough detail to evaluate whether it will be properly done. How are they going to distinguish the adult sockeye from Wenatchee sockeye at Bonneville Dam?

Response: Clipping costs are included as part of the Douglas PUD cost share. (At the present time, Cassimer Bar fish are ventral clipped prior to release.) It is expected that scale pattern analysis would be sufficient to differentiate Wenatchee and Palmer Lake fish at Bonneville Dam. If it does not appear that freshwater growth zones would sufficiently differ between fish raised at Eastbank and those raised at Cassimer Bar, other marks would be considered (ventral clip or VI tag).

ISRP Comment/Question: There is inadequate description of potential impacts and risks to the ecosystem.

Response: Risks and impacts are minimal. The proposed project is very small and fish placed in the lake will be tested to insure that they are disease-free. Oncorynchus nerka are already present in the lake (kokanee). No adults will be able to return to the lake as part of this pilot project.

ISRP Comment/Question: The proposal describes the existence of a 16m dam that will block passage. Elimination of the dam or passage past this dam should be secured before this project is funded. On the plus side, there is a significant cost share on this with Douglas County PUD.

Response: Passage at this dam has been proposed by several fisheries agencies. However, it likely will be several years before passage is actually provided, by which time the Cassimer Bar program would likely be terminated. This would remove any potential cost share.

**Project: 20127 Walla Walla River Basin Monitoring and Evaluation Project**
Sponsor: Confederated Tribes of the Umatilla Indian Reservation

CBFWA tier: 1
ISRP review: Delay funding until an independent comprehensive review of the Walla Walla program is done. The review needs to be coordinated with related projects (9901100, 20021) to identify overlap and collection of unnecessary data.

ISRP Comment/Question: Delay funding until an independent comprehensive review of the Walla Walla program is done. The review needs to be coordinated with related projects (9901100, 20021) to identify overlap and collection of unnecessary data. This project needs close coordination with 20021, which has similar objectives.

Response: The ISRP recommends that this proposal be evaluated as part of a comprehensive Walla Walla program review. This has already been done four times, including the Walla Walla Subbasin Plan (CTUIR et al. 1990), Wy-Kan-Ush-Mi Wa-Kish-Wit, Tribal Restoration Plan (CRITFC 1995), Walla Walla Basin Reconnaissance Report (COE 1997), and in the subbasin plan updates provide in the CBFWA FY2000 Annual Implementation Work Plan. These documents call for numerous and comprehensive actions to restore salmon and steelhead. The documents also identify monitoring and evaluation activities as critical to adaptive management.

The ISRP assumed that Washington State Department of Fish and Wildlife efforts (project numbers 9901100 and 20021) were duplicative with this project (project number 20127). Does the ISRP suggest that the State of Washington conduct M&E work in Oregon from their Dayton office? The project managers suggest that work conducted in Washington does not duplicate but complements work conducted in Oregon. Logistical constraints of geography and state boundaries suggest that the ISRP recommendations were not well thought out. As explained in the proposal, the project's goals, purposes, and endpoints relate to determining critical information about the status of salmonid populations (distribution, abundance, etc). Furthermore, as detailed in the proposal, the tasks are coordinated and are in concert with other projects operating in the basin. Research project leaders coordinate their efforts to avoid duplication of effort and to enhance complementary monitoring. Monitoring tasks were developed in concert with managers. Managers are working on a number of proposals to restore salmon and enhance steelhead in the basin. Evaluating the various proposals and options to restore salmonids in the basin requires information about the status of steelhead, resident trout, salmon and their habitat. Efforts will be coordinated to maximize the information collected with the limited resources available.

ISRP Comment/Question: This proposal has to do with collection of baseline data, with no explanation of the goal, purpose or endpoint. Analysis and interpretation of the data are not adequately described.

Response: See comments listed above or Section 1, page 1 of the proposal. See also Section 4 pages 3-5, Section 7, page 8, Section 8, page 9, and Section 10, page 19.

References:

Columbia River Inter-Tribal Fish Commission (CRITFC). 1995. Wy-Kan-Ush-Mi Wa-Kish-Wit, Spirit of the salmon, the Columbia River anadromous fish restoration plan of the Nez Perce, Umatilla, Warm Springs and Yakima Tribes, Volumes I and II.

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Rowan, Gerald D. 1999. Umatilla Hatchery Satellite Facilities Operation and Maintenance. Annual Progress Report, 1998. Report submitted to Bonneville Power Administration. Project Number 83-435. 54 pp.

U.S. Army Corps of Engineers, 1997. Walla Walla River Wastershed, Oregon and Washington – Reconnaissance Report. U.S. Army Corps of Engineers, Walla Walla District, Walla Walla Washington.

**Project: 20131 Enhance North Fork John Day River Subbasin Anadromous Fish Habitat**
Sponsor: Confederated Tribes of the Umatilla Indian Reservation

CBFWA tier: 1
ISRP review: Delay funding until a monitoring plan for anadromous fish is presented.

ISRP Comments/Question: It seems apparent that selected habitat enhancement projects would increase the potential for fish production, but one wonders if there would be greater benefit in the Middle Fork, South Fork or mainstem John Day River. An estimate of the extent of improvement expected from salmon and steelhead runs would be helpful.

Response: Stuart and Williams (1988) indicated habitat enhancements would significantly increase juvenile steelhead populations in North Fork John Day tributaries. Stuart and Williams (1988) estimated that enhancements would increase steelhead carrying capacities in the Desolation Creek Drainage from 3,575 to 7,150 smolts and in the Camas/Owens Creek Watershed from 1,625 to 3,250 smolts. Steelhead redd counts increased from six redds to 37 redds on three miles of Fox Creek, a tributary within the North Fork John Day Drainage, after eight years of habitat recovery (Neal, 1996).

The Northwest Power Planning Council (1994) recommended giving “priority to actions that maximize the desired result per dollar spent" and giving “higher priority to actions that have a high probability of succeeding at a reasonable cost over those that have great cost and highly uncertain success." The North Fork of the John Day Basin supports 70 percent of the distribution of adult spring chinook salmon and 43 percent of the adult steelhead within the John Day Drainage (Sanchez and others, 1988). Due to high salmonid utilization in the North Fork, it would prove much more cost effective to prioritize and recover degraded habitat within this subwatershed over other areas of the John Day Basin. In addition, fisheries managers have agreed to manage the John Day Basin strictly for wild fish without any hatchery intervention. This largely restricts salmon and steelhead recovery plans to habitat enhancement measures.

ISRP Comments/Question: One stated objective is to obtain conservation easements with three or four landowners, yet there is little assurance they can be secured.

Response: The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) cannot legally and morally obtain signed landowner agreements if Bonneville Power Administration (BPA) cannot guarantee funding will be secured for project implementation and maintenance. In the past, BPA personnel have directed the CTUIR to initiate agreements with landowners in the Umatilla Basin, but not acquire conservation easements until requested funds have been approved. Yet the Independent Scientific Review Panel is questioning CTUIR's ability to obtain landowner agreements?

Three principle landowners own contiguous stretches of stream habitat in tributary areas where the CTUIR is proposing to implement habitat enhancements. According to Oregon Department of Fish & Wildlife personnel (Jeff Neal, personal communication), all three landowners expressed a desire to participate in habitat recovery efforts when initially contacted. The North Fork John Day Watershed Council (Robert Stubblefield, personal communication) has also stated that landowners are willing to partner in habitat restoration efforts.

ISRP Comments/Question: The authors claim that high tensile fencing is very cost-effective relative to barbed wire, but offers no quantitative evidence.

Response: The CTUIR has subcontracted over 20 miles of riparian corridor and floodplain fence construction in the Umatilla Basin since 1988. Based on 11 years of experience with fence construction costs, smooth-wire high tensile fence construction has averaged approximately $4.95/yard and barbed-wire fence construction has averaged approximately $10.70/yard. Due to the fluidity of the fence design and ability of high tensile fencing to withstand impacts, this type of fencing requires much less maintenance than barbed-wire fencing. Thus, construction of high tensile fencing also results in substantial savings in Operations and Maintenance (O&M) Funds.

ISRP Comments/Question: The proposal notes that “a one-per-reach” macro-invertebrate sample will be taken, but does not state how many in total. Will this sampling be adequate?

Response: Three 100 ft (30 m) macroinvertebrate sampling stations will be established in each stream reach of interest. Stations will be located upstream (a control), within, and downstream of habitat enhancement project areas. Three stratified, random macroinvertebrate samples will be collected from riffles within each station with a Winget-Modified Surber Net to provide a measure of community representation and data for statistical analysis. Macroinvertebrate populations will be sampled once each year. Information obtained from aquatic macro-invertebrate surveys should prove useful in showing the effects of physical and water chemistry influences (i.e., habitat improvements) within project areas over time.

ISRP Comments/Question: The proposal would be improved with discussion of redd counts, larval, juvenile, and smolt salmonid counts as part of the assessment procedures. Similarly, it should include plans to estimate changes in stream morphology/hydrology.

Response: The project will coordinate with pertinent entities/projects to obtain assessment information regarding redd counts, larval, juvenile, and smolt salmonid counts. This project would require considerably more funding ($200,000 to $300,000) if assessment procedures and stream morphology/hydrology estimates were to be actually conducted by the project. Although the project plans to conduct pre- and post-implementation monitoring (as described in the FY2000 proposal), please keep in mind this project, as proposed, is not a "research project.” Additional staff or subcontractors would be required to carry out the requested assessment procedures and stream morphology/hydrology estimates.

References:

Meyers, L.H. 1987. Montana BLM Riparian Inventory and Monitoring, Riparian Technical Bulletin No. 1., BLM-MT-PT-88-001-4410, Billings, MT.

Neal, J.A. 1996. John Day River Subbasin Fish Habitat Enhancement Project Annual Report. BPA Project No. 84-21, Bonneville Power Administration, Portland, OR.

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Sanchez, J., J. Dougan, B. Frazier, R. Metz, and C. Scheeler, 1988. North Fork John Day River and Tributaries-Fish Habitat Improvement Implementation Plan. BPA Project Number 84-8, Bonneville Power Administration, Portland, OR.

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**Project: 20134 Acquire Oxbow Ranch -- Middle Fork John Day River**
Sponsor: The Confederated Tribes of the Warm Springs Reservation of Oregon

CBFWA tier: 1
ISRP review: Fund for one year with medium priority. Subsequent funding contingent on adequacy of baseline data and monitoring plans.

ISRP Comments/Question: The proposal is well written and is accorded medium priority as a mitigation purchase, but it might well discuss what other options may be available to achieve the same benefits at lesser cost.

Response: Options other than purchase of this property might be development of an agreement with the current owners (The Nature Conservancy) to lease and manage this property from them. However, TNC and other agencies felt the property was too valuable to risk losing when it came on the market in 1998, and purchased the land. TNC did not purchase the property to own; they purchased to secure it until another manager could acquire the land from them. Although it may be less expensive to develop and implement a management agreement for this specific property, it would likely affect the future willingness of TNC to take the risk of purchasing vital habitats.

Finally, according to a study that compared various mitigation methods, fee title acquisition and subsequent management is generally more cost effective than easement. (Prose et al. 1986). The Oregon Trust Agreement Planning (OTAP) Project (BPA 1993) concurred with this finding.

The project sponsors feel that acquisition is the best option.

ISRP Comments/Question: The narrative describes the Middle Fork of the John Day River as a high priority mitigation site, but it should better identify the unique qualities of this 1,022-acre parcel.

Response: The property includes 550 acres bottomland riparian and wetland habitats along four miles of the Middle Fork John Day River which is one of only two rivers in the entire Columbia River Basin that is specifically managed for wild runs of steelhead and spring Chinook salmon. The Middle Fork Oxbow Ranch property is located in the upper 17 miles of river which contains the majority of spawning grounds for summer steelhead, recently federally listed as threatened, and spring chinook salmon. There are five tributary streams crossing the property, including Granite Boulder Creek, one of two tributaries of the Middle Fork producing federally listed bull trout. Acquisition and enhancement of this property will provide a riparian connection between US Forest Service lands upstream and downstream of the property. There are 5 cfs senior water rights attached to the property.

ISRP Comments/Question: Reviewers note the inadequate baseline data and plans to monitor vegetation parameters.

Response: Baseline data for the property is limited and the project sponsors will gather that information as part of the planning process once the acquisition occurs. Vegetation monitoring will also be part of the planning process and evaluation process.

ISRP Comments/Question: An additional 5 cfs of additional instream water rights is referenced in the proposal, but it is unclear if that is significant to improve habitat for anadromous fish.

Response: Yes, 5 cfs would add approximately 15-20 % to the fall flows of the Middle Fork John Day River.

ISRP Comments/Question: The impacts of mining, grazing and logging are cited only in passing. Even if these considerations are to be left to future surveys, estimates would be helpful in establishing if restoration of this ranch parcel with habitat improvements is to become unduly expensive and long-term.

Response: The ISRP is correct, there are a number of unknowns involving the restoration of this site. Until the project sponsors have the opportunity to conduct some assessments of the project area they cannot estimate the short term or long term costs of the project. There have been, however, similar restoration projects completed in adjacent systems that have been effective. Passive restoration techniques will be implemented whenever possible.

ISRP Comments/Question: A management plan apparently does not exist for this project, yet the authors estimate one per cent of the overall budget is committed to the plan's implementation.

Response: No, a management plan does not exist. Without knowing whether this project would be approved the project sponsors did not develop a management plan as it would have been too time consuming and costly to do. The project sponsors have requested some planning money as part of the project solicitation, which is the 1% the ISRP refers to. Also, the project sponsors have participated in management planning and implementation for water resources, livestock grazing, historical site protection, fence maintenance, noxious weed removal, and road access in 1999, with the TNC, USFS, Oregon Water Trust and the Oxbow Ranch foreman.

ISRP Comments/Question: Future funding requirements and potential funding sources are not discussed.

Response: Until management plans are developed the project sponsors will not know what the future funding needs are. They did estimate outyear costs on page 6 of the proposal. The project sponsors anticipate requesting operation and maintenance funds from BPA into the future. Since they will only receive half of the required funds to purchase this property through the 1999 BPA anadromous fish budget, they will be seeking other funding sources as well as BPA to complete the purchase. There are a number of agencies very interested in seeing this project through and the project sponsors will be working cooperatively with them as well.

**Project: 20135 Consumptive Sturgeon Fishery-Hells Canyon And Oxbow Reservoirs**
Sponsor: Nez Perce Tribe

CBFWA tier: 1
ISRP review: Do not fund. This proposal is not scientifically sound.

ISRP Comment/Question: Justification of this project is predicated solely on mitigation.

Response: The project sponsor, Nez Perce Tribe, concurs that the proposal is a fishery mitigation project. NPPC program measure 10.4A.5 calls for Bonneville Power Administration to "...fund an evaluation of a put-and-take consumptive sturgeon fishery in Hells Canyon and Oxbow Reservoirs… ." The purpose of the proposed project is to develop and implement a fishery augmentation program to restore subsistence harvest of white sturgeon in Hells Canyon and Oxbow Reservoirs to partially mitigate for losses of white sturgeon in these and other reaches of the Snake River.

ISRP Comment/Question: Proposal states no impact to naturally spawning populations, but no data to justify the claim.

Response: The proposal states, "We believe that the augmentation...would pose minimal risk to remaining wild white sturgeons... ." Based on a two-year evaluation by IDFG and ODFW, they indicated in a letter dated March 1994 that there is very little movement of sturgeon in or out of the reservoir pools. The proposal states that fish will be monitored using sonic/radio telemetry. Telemetry will provide data from which entrainment or the potential for entrainment can be monitored and assessed. In addition, a cooperative effort with BPA project #9700900, currently collecting telemetry and population data from sturgeon in Hells Canyon, will provide additional effort in sampling to aid in detection of any unexpectedly entrained sturgeon stocked into Hells Canyon and Oxbow Reservoirs.

Furthermore, the augmentation effort will be a cooperative effort with IDFG and ODFW and consistent with regional fisheries management plans.

ISRP Comment/Question: Proposal asserts that natural spawning of sturgeon is limited by reservoir conditions, but that conditions are suitable for rearing, no data are cited to support this claim.

Response: Nearly 3,000 hours of set line effort was conducted in each reservoir by IPC with no sturgeon captured in Oxbow Reservoir and only three large adults and one juvenile sturgeon (stocked by IDFG in the early 1990s) captured in Hells Canyon Reservoir (Ken Lapla, IPC, personal communication), indicating a complete lack of recruitment in the reservoirs. The few white sturgeon captured in Hells Canyon where found in good condition (Ken Lapla, IPC, personal communication). The proposal should have reflected that the reservoirs **may** be suitable for rearing. While rearing conditions in Oxbow and Hells Canyon Reservoirs have not been measured, reservoirs have been shown to be suitable for sturgeon growth. Miller and Beckman (1993) found that juvenile (age 1-8 years) white sturgeon length-at-age and condition factors were significantly greater in three lower Columbia River impoundments than in the unimpounded lower Columbia River. In Lower Granite Reservoir the relative weight of white sturgeon was estimated at 103 (Lapla 1994). In addition, Oxbow and Hells Canyon Reservoirs once supported a commercial fishery for crayfish (IPC 1997), a common food item for white sturgeon (Lapla 1994).

ISRP Comment/Question: Proposal identifies what is to be done, but justification for the work is lacking.

Response: The justification for this project has undergone extensive public review in the NPPC Fish and Wildlife Program amendment process. NPPC program measure 10.4A.5 calls for Bonneville Power Administration to "...fund an evaluation of a put-and-take consumptive sturgeon fishery in Hells Canyon and Oxbow Reservoirs.. ." Subsistence fishing for white sturgeon is of great cultural significance to the members of the Nez Perce tribe. The decline of white sturgeon population due to dam construction and operation has limited subsistence fishing opportunities. In addition, full implementation of this project would provide an opportunity for the residence of Idaho to harvest white sturgeon, which has been restricted to catch-and-release since 1970.

ISRP Comment/Question: The proposal lacks description of how hypotheses will be tested.

Response: The proposed project is a mitigation project and not a research project. Therefore, the proposed project was not designed to test specific hypotheses. However, the development of monitoring and sampling protocols, with cooperation from IDFG and ODFW, will provide valuable data on juvenile white sturgeon life history such as; growth rates, survival rates, habitat use, and diet data. From these data specific hypothesis can be formulated and tested within the context of the project goals and objectives and may provide valuable data for conservation and enhancement efforts in other areas of the basin.

ISRP Comment/Question: The goal of harvest of 250 white sturgeon is not ecologically explained or justified, nor is the stocking rate that is intended to achieve it. The proposal states that stocking densities are low relative to historical levels, but does not explain how low or explain how stocking density would relate to current reservoir conditions or other fish populations.

Response: It is assumed that Oxbow and Hells Canyon Reservoirs can support similar densities (approximately 3.5 sturgeon / hectare) to those found in the lower Columbia reservoirs (Beamesderfer et al. 1995). Under this assumption Oxbow Reservoir could support a population of over 1,600 white sturgeon and Hells Canyon Reservoir could support over 3,300 white sturgeon. Population modeling, using the natural and fishing mortality rates referenced in the proposal, supports the stocking rate and anticipated harvest number and is consistent with the assumed carrying capacity of the reservoirs. Assumptions made in generating the proposed stocking and harvest numbers were put forth as a starting point and will be refined, as data becomes available.

ISRP Comment/Response: The proposed project would add 900 fish before developing a management plan.

Response: The primary effort for FY 1999 is to develop a management plan in conjunction with IDFG and ODFW. In addition to the management plan, a master plan and NEPA documents are to be submitted and approved before stocking occurs. Continued funding for the implementation of this project is contingent upon: 1) development and peer review of a production master plan consistent with the Fish and Wildlife Program, and 2) that the Council

(NPPC) specifically approve the master plan for the sturgeon fishery if warranted. Stocking is tentatively planned for FY 2000 pending the approval of required documents.

ISRP Comment/Question: The stock source for the sturgeon is not identified.

Response: The source of sturgeon for stocking has not yet been identified. Direct progeny from wild Snake River stock is available. In addition, ODFW is currently assessing the feasibility of capturing wild juveniles in the lower Columbia River and transporting them into the lower Columbia River reservoirs. The preferred source of sturgeon to be stocked will be identified in a cooperative effort with IDFG and ODFW and stated in the management plan.

ISRP Comment/Question: No description of alternative ways to solve the problem of lost fish harvest.

Response: The riverine habitat needed to support all life stages of white sturgeon in Oxbow and Hells Canyon Reservoirs has been significantly altered. Habitat restoration in these areas to restore natural self-sustaining populations is not feasible. Stocking white sturgeon in these reservoirs is intended to provide increased fishing opportunities for white sturgeon with little impact to other self-sustaining or recovering sturgeon populations.

ISRP Comment/Question: No discussion of dangerous or unwanted side-effects of the project.

Response: Issues regarding dangerous or unwanted side-effects of the proposed project will be raised and addressed in a cooperative effort with IDFG and ODFW. The cooperative effort with regional managers will aid in identifying adverse effects of the proposed project and insure that the proposed project is consistent with regional fish management plans and goals. In addition, BPA requires an environmental assessment and biological assessment to identify adverse effects.

ISRP Comment/Question: Proposal state that development of alternative white sturgeon fishing opportunities through augmentation may reduce the pressures on impacted population, but they do not provide any support for this assumption.

Response: The ISRP review stated “that angling pressure for sturgeon is already increasing” and that implementation of this project “may actually accelerate the expanding interest is sturgeon fishing.” If angling pressure for sturgeon is increasing, it is the responsibility of regional fish managers to expand and increase fishing opportunities in such a way as to minimize the impact on sensitive or recovering populations. Reducing fishing opportunities would not serve the angling public nor aid in the recovery or expansion of white sturgeon populations. The implementation of this project would increase fishing opportunities for sturgeon with little impact to natural population. This project would also provide data regarding post-release growth, survival, and habitat use that would be invaluable when considering other prospective white sturgeon projects designed to enhance fishing opportunities or to mitigate for hydrosystem impacts in other subregions of the Columbia Basin.

ISRP Comment/Question: What will be the objectives of the management plan?
Response: The management plan will be developed in cooperation with the IDFG and the ODFW and will address measurable goals and objectives of the fishery that are consistent with each state’s regional fishery management plan. The management plan will address stocking procedures and numbers, sampling and monitoring protocols for the fish population and the fishery, and regulations and law enforcement issues associated with the fishery.

ISRP Comment/Question: Why will augmentation begin before the plan is reviewed and approved? How can release of fish in the summer of 1999 follow the recommendations of the plan if the plan is not approved?

Response: Full augmentation will **not** begin before the plan developed in cooperation with the IDFG and ODFW is in place.

ISRP Comment/Question: How will post-release monitoring and evaluation be conducted?

Response: Specific monitoring and evaluation procedures will be identified in a cooperative effort with IDFG and ODFW and will be identified in the management plan. At a minimum, factors monitored and evaluated will include

natural mortality, fishing mortality, growth rates, fishing pressure, harvest, diet from harvested fish, population numbers, and distribution in the reservoir.

**Project: 20137 Acquisition Of Malheur Wildlife Mitigation Site.**
Sponsor: Burns Paiute Tribe

CBFWA tier: 1
ISRP review: Delay funding until concerns about value and cost-effectiveness of land acquisition are addressed. Future proposals should better develop and justify management and monitoring and evaluation plans.

ISRP Comment/Question: Delay funding until concerns about value and cost-effectiveness of land acquisition are addressed. Future proposals should better develop and justify management and monitoring and evaluation plans.

Response: Based upon the proponent's presentation this project was ranked sufficient to receive funding to meet its project objectives. The management and monitoring and evaluation plans will be developed as access to the property is obtained. Once acquisition of the property has been secured, a comprehensive plan will be developed.

Upon settlement of an acquisition and receiving O&M funding, BPA requires the proponent to have an approved management plan as well as an M&E plan. This should be viewed as a contractual requirement.

This property, that is within the Malheur River Basin, was identified in the GAP Analyses as a high priority / potential mitigation site based on a set of criteria that was used to evaluate more than 500 potential sites in Oregon. This document was prepared by ODFW in cooperation with the Oregon Wildlife Coalition and the Oregon Natural Heritage Program.

ISRP Comment/Question: What will be done with the water rights and cattle grazing rights?

Response: The water rights and uses of water will be evaluated by the Tribe and cooperating management agencies to assess the most beneficial use for the water (i.e. to create wetlands; irrigation of existing crop lands; instream flows etc). Oregon Water Trust has expressed interest in purchasing or leasing the rights for instream flows. All options and alternatives will be considered.

Livestock grazing will have to continue on Federally leased land (Bureau of Land Management allotments) to comply with the lease requirements and retain the management of these lands. Without proper utilization of the allotments, the Tribe would loose the lease and the management of the uplands. Without control of the uplands, the efforts would be lost or ineffective. Any grazing in the upland will directly impact the lowlands. The livestock management developed with the Bureau of Land Management will compliment efforts to restore and enhance the mitigation site. Only livestock numbers required satisfying the BLM lease and the Taylor Grazing Act would be applied. In consultation with the BLM, is advised to utilize the allotments with Tribal livestock to show intent to use. After Tribal obligations are fulfilled, the allotments can then be placed in a "Rest – Rotation" status.

Because the Tribe requires complete control of the uplands (BLM allotments), subleasing the allotments may not be a feasible solution to our efforts.

ISRP Comment/Question: Who will own the land?

Response: The Tribe would own the property.

ISRP Comment/Question: Is the cost reasonable for a ranch in poor condition?

Response: At $200 per acre, ~1000 acres of water rights, ~7 miles of river property and 24,000 acres of leased federal land and 4000 acres of state leased land; the cost is very reasonable. In recent visits to the property by NPPC members, ODFW staff and other tribal biologist (Oregon Wildlife Coalition), it was agreed that the property has high potential to convert the land from cattle ranch to a fish and wildlife management area.

ISRP Comment/Question: Do the location and water rights of the land make up for its poor condition?

Response: Although the ranch is in a depressed and overuse state, it is still very productive and has a high potential for restoration. Removing livestock from all riparian and sensitive areas will drastically reduce most of the damage that degrades the property.

**Project: 20138 Design And Construct Neoh Walla Walla Hatchery**
Sponsor: Confederated Tribes of the Umatilla Indian Reservation

CBFWA tier: 1
ISRP review: Do not fund. The proposal is not scientifically sound. The project needs to be included in an Independent Programmatic Review of the Umatilla and Walla Walla hatchery programs.

ISRP Comment/Question: Proposal is not scientifically sound.

Response: The reviewer offers no specific comments that support this claim. The project is consistent with the Council's Fish and Wildlife Program (7.4 L1) and has been supported repeatedly by numerous planning efforts (see below).

The project complements numerous ongoing projects (passage improvements, flow enhancement planning, stream habitat enhancement, etc.) that are being implemented to restore salmon and steelhead populations in the Walla Walla Basin. In order to restore extirpated spring chinook, the hatchery tool must be used in concert with the above mentioned efforts to put the fish back where they once existed. There are 20 miles of pristine spawning and rearing habitat in the South Fork Walla Walla drainage, one of the finest quality streams in Northeast Oregon. CBFWA and CTUIR consider it scientifically sound to re-establish an extirpated population by embarking upon a comprehensive program, which addresses all factors that lead to the demise of the species (similar to the successful effort being implemented in the Umatilla Basin). The Artificial Production Review recommendations of the Scientific Review Team (SRT 1999) will be used to implement actions such as utilization of endemic broodstock (for summer steelhead) and low density rearing and acclimation of smolts in natural production areas. An alternative to using the hatchery tool would be to wait 100 years or longer for natural spring chinook straying and recolonization to occur.

The listed summer steelhead population is down to 200-300 fish in the Oregon portion of the Walla Walla Basin. The CTUIR proposes to model a Walla Walla steelhead program after the ongoing, successful Umatilla program. The Umatilla program utilizes endemic broodstock and releases fish in natural production areas to supplement natural production. This effort is showing unique results. The Umatilla River has the only steelhead population in Northeast Oregon that is experiencing stable or increasing spawning escapement and harvest (while also providing annual broodstock needs). If it is not scientifically sound to meet harvest and endemic broodstock management goals while maintaining genetic diversity and total returns and spawning escapement, the CTUIR would like to know what is considered sound by the ISRP. The CTUIR does not consider a no-hatchery supplementation action with continued declines (or extirpation) of the steelhead population a scientifically sound option.

ISRP Comment/Question: The project needs to be included in an Independent Programmatic Review of the Umatilla and Walla Walla hatchery programs.

Response: This project has already been evaluated four times as part of comprehensive program planning. These efforts included the Walla Walla Subbasin Plan (CTUIR 1990), Wy-Kan-Ush-Mi Wa-Kish-Wit, Tribal Restoration Plan (CRITFC 1995), Walla Walla Basin Reconnaissance Report (COE 1997), and in the subbasin plan updates provided in the CBFWA FY2000 Annual Implementation Work Plan. All of these documents have identified Walla Walla hatchery as a critical element in a comprehensive basin salmon and steelhead restoration program.

In addition to the above efforts, this project must successfully go through a very detailed and thorough NPPC production project review process prior to implementation. A draft master plan has been completed and a final is scheduled for FY 2000. Construction costs were deferred until FY2001 in the CBFWA recommended budget. Adjusted costs for FY2000 are 250K for final planning and design.

ISRP Comment/Question: This proposal and project 8805302 should be combined. This proposal requests an additional $1.38 million for what appears to be part of the previous proposal.

Response: In FY1999, the two Umatilla and Walla Walla hatchery projects were combined into one proposal. At the request of CBFWA, NPPC, and BPA, the proposals were done separately in FY2000 to hopefully avoid confusion. Each project will have a separate NPPC master planning process. CTUIR submitted two separate proposals in FY2000 but, for an unknown reason, the two proposals that were circulated for review were the old UM/WW FY 1999 proposal and the new Walla Walla FY2000 proposal (the new separate Umatilla FY2000 proposal was not circulated for review). Because of this error, the ISRP comment on duplication is understandable. However, there is no duplication, although the proposed incubation and rearing for both projects will occur at the same S.Fk. Walla Walla river site. The Umatilla project (8805302) calls for spring chinook production for the Umatilla River and the Walla Walla project (20138) calls for spring chinook and summer steelhead production for the Walla Walla River.

ISRP Comment/Question: No out-year costs are shown.

Response: If the proposal had been fully read by the reviewer, this question would have not been asked. Operation and maintenance costs following construction are to be picked up under project number 8343500 (Operate and Maintain Umatilla Hatchery Satellite Facilities). Therefore, no costs are identified in outyears. This fact is mentioned five times in the proposal (once in Section, 4 once in Section 7, once in Section 8, and twice in Section 9).

It is disheartening that the project reviewers who obviously did not spend much time reviewing the project proposal would recommend not funding this project. Also, the fact that the reviewer recommends “do not fund” for a hatchery project that has yet to go through a very comprehensive NPPC 3-step review process truly shows the ISRP negative bias towards production projects.

**Project: 20139 Walla Walla River Fish Passage Operations**
Sponsor: Confederated Tribes of the Umatilla Indian Reservation

CBFWA tier: 1
ISRP review: Delay funding until detailed methods and site specific actions are provided and an independent comprehensive review of the Walla Walla program is done.

ISRP Comment/Question: Delay funding until detailed methods and site specific actions are provided and an independent comprehensive review of the Walla Walla program is done.

Response: The ISRP recommends that this proposal be evaluated as part of a higher programmatic level review. This project has already been evaluated four times as part of comprehensive program planning. These efforts included the Walla Walla Subbasin Plan (CTUIR 1990), Wy-Kan-Ush-Mi Wa-Kish-Wit, Tribal Restoration Plan (CRITFC 1995), Walla Walla Basin Reconnaissance Report (COE 1997), and in the subbasin plan updates provided in the CBFWA FY 2000 Annual Implementation Work Plan. All of these documents have prioritized the need to improve physical passage conditions in the Walla Walla Basin and recognized that long term operation and maintenance of passage facilities is a key factor in restoration of fish populations in the Walla Walla River.

In addition to these planning documents, quarterly management meetings are conducted and a Walla Walla Basin Annual Operating Plan is being developed. These in-basin forums are developing the relationship between this project and other fish restoration activities and projects in the basin.

The proposers would recommend to the ISRP that all proposals be reviewed and evaluated by a group with more knowledge of the programs and projects in question. The proposers would welcome tours to help evaluators become more familiar with projects in the subbasin setting. Based on the ISRP questions and comments, it would appear that the reviewers did not fully read the proposals or missed important information contained in them. Specific responses to ISRP comments or questions for each of the individual proposals follow.

ISRP Comment/Question: Although the reviewers don't doubt the lack of water in the Walla Walla, the specifics of the problem and the activity are poorly explained. What is this proposal about?

Response: It is stated numerous times in the proposal document that inadequate passage conditions caused by low flows and passage deficiencies have been the primary contributors to the decline and extirpation of salmonid populations in the basin. There are also numerous places in the proposal where the project activities are outlined. These include trapping and hauling of fish during inadequate flow periods, operation of juvenile screens, bypasses, adult ladders to optimize passage conditions during adequate flow periods, and coordination of all passage related activities.

ISRP Comment/Question: What is the specific location of the collection facility and release cites?

Response: A juvenile trap is under construction at Little Walla Walla River (RM 46). Adult trapping capabilities were designed into the new Burlingame Ladder (RM 36) and are proposed for the new Nursery Bridge Dam Ladder (RM 45), where there is also an adult. Which of these facilities are going to be used for trapping is still under discussion by the management agencies. The same is true for the release sites to be used. These management details will be outlined in the development of the Walla Walla Basin Annual Operating Plan.

ISRP Comment/Question: The watershed effort needs to address the lack of water as the primary limiting factor.

Response: The proposers disagree with the ISRP review comment that lack of water is the primary limiting factor. While lack of water is a limiting factor during portions of the year, there are also long periods during the year where flows are adequate for both upstream and downstream migration, but physical passage constraints impede migration. During these periods, physical passage constraints are more of a limiting factor than flow.

**Project: 20147 Evaluate Bull Trout Population Status/N.F. Clearwater R. - NPT**
Sponsor: Nez Perce Tribe

CBFWA tier: 2
ISRP review: Do not fund.

ISRP Comments/Question: The umbrella proposal encompassing both projects (20557) reasonably articulates the problem (primarily a lack of background information). The premise is contradicted with claims, first, of an information deficit with respect to "distribution, abundance, and population viability of native fish populations (specifically Bull Trout) in Dworshak Reservoir and it upstream tributaries" followed by "A substantial amount of data exists for the North Fork Clearwater basin from fisheries activities conducted in the reservoir and upper tributaries by NPT, USFS, and IDFG. We will assemble these data to determine streams where bull trout have been observed, and identify population sizes and densities."

Assessment of these data should have been undertaken before or while developing the proposal. The question of how much information exists clouds the entire proposal. Specifically, information may already exist to locate spawning areas and to provide estimates of the number of spawners. Analysis of existing information may provide some estimates of the number of migratory fish at different locations and when they are there. Preliminary analysis of such data would provide the basis to estimate how many fish can be expected to be available for tagging, and what level of effort must be expended (and, whether that is realistic) to gain the recaptures necessary to provide reliable answers to questions. Without such information, the proposal is technically inadequate.

Response: Bull trout observations in the North Fork Clearwater basin were assembled by the Technical Advisory Team during the Problem Assessment phase of Governor Batt's Bull Trout Conservation Plan (TAT 1998). The TAT determined that there were data gaps in bull trout distribution, life history, and habitat use in the basin (TAT 1998). Most observations were incidental during other fisheries surveys, and do not provide adequate insight into status, life history, and critical habitat. Dworshak Reservoir is also a large data gap. Bull trout have been caught in the reservoir, but seasonal use, duration of use, behavior, and effects of operation are unknown until further scientific data can be collected. Although some spawning areas have been identified, little effort has been expended on collecting these data. Therefore, the timing of spawning activity has not been assessed. Most counts have occurred well after the spawning peak, and do not provide accurate numbers (TAT 1998). The use of redd counts to

assess population status has not been found to be useful due to variation in observer experience, duration of spawning activity, geologic parent material, and timing of survey (D. Buchanan, ODFW personal communication). Additional bull trout streams are being identified annually in the North Fork Clearwater basin by the westslope cutthroat trout genetic inventory surveys (Weigel and Zacrajsek 1999) and USFS stream habitat surveys.

ISRP Comments/Question: Failure to conduct a preliminary analysis of existing data left reviewers unconvinced that the approach would be successful. For instance, the approach involves Redd counts and PIT tagging of juvenile trout at selected sites (50 meters every 400 m) along "all known Bull Trout streams". There are statistical issues associated with the design (why 50 m every 400?), yet none of these are discussed. Also, how does one know (or estimate) the magnitude of the undercount problem? Surely the snorkeling approach is not going to recover every subject in the sample zone, but there must be some way of estimating a recovery efficiency.

Response: The proposal does not try to count every bull trout in the basin. The proposal is attempting to define subpopulations in the basin, determine relative use of the reservoir by these subpopulations, and determine the status of each subpopulation. The extent of the distribution of bull trout within these streams is also unknown. Therefore, the project sponsorsproposed the stratified random selection of sample sites longitudinally in the stream. Estimating numbers of bull trout available for tagging is difficult without the baseline density and longitudinal distribution information. Therefore, the project sponsors have proposed a scientific study designed to specifically address the density, distribution, status, and critical habitat for bull trout. It is generally accepted that the upper North Fork Clearwater tributaries, upstream of Lake Creek, are a stronghold for bull trout within the basin; however, all other spawning groups are of unknown status. Redd surveys have found less than 10 redds per year in the Little North Fork Clearwater and Kelly Creek. Bull trout have not been observed in Weitas Creek for several years (TAT 1998). Therefore, the status of these subpopulations may be relatively weak. The conservation of the genetic characteristics and the long term persistence of the population are reliant on preserving subpopulations and migratory corridors (Rieman and McIntyre 1992). Other studies in the Columbia basin have found that bull trout utilize reservoirs, home to natal streams, and migrate at variable times within major basins (Buchanan et al. 1997. Weigel and Zakrajsek 1999).

ISRP Comments/Question: The methods outlined under Objective 1 include extensive habitat work that has no relevance to the objective.

Response: The habitat data collected at each snorkel will be used to determine characteristics of bull trout habitat and identify the status of the critical habitat. Determining habitat condition is identified in the Biological Objective just before the methods for Objective 1. Identification of critical habitat is also mentioned as a goal of the project in the Abstract. The identification of this critical habitat is essential to implementing Objective 3: Develop and implement strategies to protect and perpetuate bull trout populations in the North Fork Clearwater drainage.

ISRP Comments/Question: Brief mention is made that densities of bull trout populations in streams will be estimated via snorkeling, and that PIT tags will be placed in fish larger than 120mm. The sponsors include no information on the number of tags and observations needed to meet objectives. They offer no information describing methods of tag detection or monitoring methods/sites and include no statement as to the duration of the project.

Response: One thousand PIT tags were requested in the budget section of the proposal. The proposal states that bull trout will be captured using aquarium nets. The project sponsors decided to use this methodology for its success and lack of stress on the fish (in comparison to electro-shocking). Snorkel surveys have been comparable to electroshocking surveys in the North Fork Clearwater (D. Weigel unpublished data). A PIT tag reader will be used for tag detection on all collected bull trout in the basin, and scanners were included in the budget. IDFG will collect bull trout in the reservoir under the cooperative project (Project #20148). They will also scan for and implant PIT tags. The PIT tags are intended to provide a long-term record of trout recapture during the study. (Radiotag battery life is approximately only one year.) Monitoring was not included in the proposal because the current objective is to determine subpopulation status and movements. If management actions result from the project, a monitoring program may be necessary. Outyear costs were identified according to the time needed to address the major objective of determining movements and population status.

ISRP Comments/Question: Escalating budgets are shown for every year to 2004, the last year included in the proposal form, but the proposal lacks a clear statement of what would be done in each year of the project, and when it would be completed.

Response: The proposal form only accommodates details on activities proposed for FY2000.

**Project: 20148 Evaluate Bull Trout Population Status/N.F. Clearwater R - IDFG**
Sponsor: Idaho Department of Fish and Game and Nez Perce Tribe--Subproposal

CBFWA tier: 2
ISRP review: Do not fund.

ISRP Comments/Question: Proposal does not reflect an adequate analysis of existing data.

Response: There has been no project specific work conducted for bull trout and the role Dworshak Reservoir plays in their life history. Cursory observations of bull trout have been made in a number of unrelated projects conducted in the reservoir and the North Fork Clearwater River drainage (as referenced in the proposal). Because of the following, the project sponsors believe operations of Dworshak Dam and Reservoir play a role in the continued survival of bull trout populations in the drainage:

a. An Idaho Department of Fish and Game study in southern Idaho in Arrowrock Reservoir documented the movement of bull trout from the reservoir downstream below Arrowrock Dam and subsequently the loss of that segment of the population to the drainage upstream from the reservoir.
b. An ongoing Idaho Department of Fish and Game study to evaluate the extent of gas bubble trauma in resident fish below Dworshak Dam has documented an increase in bull trout observations during periods of high outflow from the reservoir.
c. As with other predacious fish in Dworshak Reservoir, bull trout may rely on the kokanee salmon population in the reservoir as a significant food base. The recent crash of the kokanee population because of entrainment through Dworshak Dam may have had a negative impact on that segment of the North Fork Clearwater River bull trout populations that inhabit the reservoir during portions of their life history.

ISRP Comments/Question: The proposal states that radio transmitters would be implanted in “50 Bull Trout annually for 5 years” but neglects to describe the statistical implications of this sample size.

Response: The number of 50 bull trout per year was not based on statistical implications, but on the number of radio tags that a project of this size could realistically follow in a reservoir and drainage the size of the proposed study area. Additionally, based on the number of bull trout observed during other studies, the project sponsors may only have that number of adequate sized fish for implantation. While statistically that number may appear weak, it is a realistic number to us. The project sponsors can deal with the statistics as they generate tags in the field.

ISRP Comments/Question: What issues exist with respect to non-randomness of the sample selection, due to inevitable complications in recruiting subjects?

Response: The 1987-89 study by the Idaho Department of Fish and Game and the Nez Perce Tribe captured only two bull trout in over 1,000 hours of gill net. The low catch of bull trout during this effort directed us to focusing the effort at the mouths of the reservoir’s major tributaries, mainstem North Fork Clearwater River and the Little North Fork Clearwater River. The project sponsors believe that these areas will yield acceptable number of fish to be tagged and recognize the non-randomness of the sample sites, but believe there is other viable option at least for the first year of the study. The project sponsors can certainly make random efforts to collect fish during subsequent years.
ISRP Comments/Question: Part of the proposal is to evaluate the impact of operations at Dworshak on bull trout, but the methods are to monitor conditions (temperature) in the reservoir and attempt to explain the distribution of radio-tagged fish when temperature conditions change.

Response: Knowledge of reservoir temperature with bull trout movement relates only to potential temperature blocks in the upper reservoir at the time these fish would be migrating into the main stem North Fork Clearwater River. The late 1980's study suggests that a thermal block did occur at the time fish would have been migrating. This study will evaluate temperature in the upper reservoir and the movement of bull trout into the North Fork Clearwater River.

ISRP Comments/Question: These and other potential effects cannot be evaluated unless operations at Dworshak can be manipulated for the express purpose of answering these questions.

Response: The purpose of the study is to gain knowledge about bull trout and their life history under normal operating conditions of Dworshak Dam and Reservoir: Do the present operating procedures impact bull trout population survival in the North Fork Clearwater River? Based on the information obtained, the project sponsors will be able to make statements regarding how the operations impact bull and only suggest that changes could be made to enhance survival. The project sponsors anticipate that over the duration of the study, there will be climatic variations that the project sponsors allow us to have varying flow management conditions from Dworshak Dam.

ISRP Comments/Question: More details must be provided on how the joint tasks under Objective 3 will be conducted.

Response: The Idaho Department of Fish and Game and the Nez Perce Tribe has an excellent history of working cooperatively in Dworshak Reservoir and the project sponsors will continue that strong cooperation. The respective biologists for the companion efforts will meet weekly or biweekly, make monthly joint presentation to the two entities, prepare joint monthly reports, prepare joint annual reports, and finally, work together in development of strategies for protecting bull trout in the North Fork Clearwater River drainage.

ISRP Comments/Question: No clear statement of project duration is given.

Response: As indicated in the proposal the data collection and development of strategies will be completed at the end of FY 2004. There is nothing implied that would prolong this effort.

ISRP Comments/Question: No milestones are presented for individual years.

Response: There was some confusion as to what was actually needed in the milestone column of the proposal and there was not adequate space to place milestones for each objective for the duration of the project. Therefore we are not sure how to address this comment, but will try with the following.

Objective 1: Year 1 Milestone - Collect a goal of 100 bull trout and record length, weight and age. Radio-tag 50 bull trout and monitor on at least a bi-weekly basis throughout the year. Year 2 Milestone - Collect a goal of 100 bull trout and record length, weight and age. Radio-tag 50 bull trout and monitor these and residuals from year 1 on at least a bi-weekly basis throughout the year. Prepare map of bull trout locations since inception of project. Year 3 – Milestone - Continue to collect physical parameters on 100 bull trout and radio-tag up to 50 fish. Continue to monitor this year's and previously tagged fish. Year 4 Milestone - Continue to collect physical parameters on 100 bull trout and radio-tag up to 50 fish. Continue to monitor this year's and previously tagged fish. Year 5 - Develop of comprehensive report on population status and viability.

Objective 2: Year 1 Milestone - Generate map locations of monitored fish in North Fork Clearwater River drainage and develop movement patterns. Year 2 Milestone - Generate map locations of monitored fish in North Fork Clearwater River drainage and develop movement patterns. Year 3 Milestone - Generate map locations of monitored fish in North Fork Clearwater River drainage and develop movement patterns. Year 4 Milestone - Generate map locations of monitored fish in North Fork Clearwater River drainage and develop movement patterns. Year 5 - Development of comprehensive report on movement patterns relate locations to influences of reservoir operations.

Objective 3: Year 1 Milestone - None. Year 2 Milestone - None. Year 3 Milestone - None. Year 4 Milestone - None. Year 5 - Development of risk factors for bull trout populations in the North Fork Clearwater River. Development of strategies to minimize or eliminate risk factors to population sustainability. Preparation of comprehensive report on population status, viability, and strategies to sustain population.

Objective 4: Year 1 Milestone - None. Year 2 Milestone - None. Year 3 Milestone - None. Year 4 Milestone - None. Year 5 - Development implementation program to minimize or eliminate risk factors to population sustainability. Preparation of evaluation.

**Project: 20156 Identification Of Redband And Rainbow Trout In The N F Clearwater Basin**
Sponsor: Nez Perce Tribe

CBFWA tier: 3
ISRP review: Fund

ISRP Comment/Question: This project is intended to show whether redband trout exist in the North Fork Clearwater River basin, and to determine whether rainbow trout have introgressed into redband populations. It is of interest to know whether redband trout exist in the basin; however, if redbands are present, introgression is likely. In any case, knowledge that their gene pool now includes rainbow trout genes is of little utility primarily because there is no reasonable way to regain their original genetic structure. The best to be done now, is to stop stocking exotic rainbow trout. If a decision is made to continue stocking Dworshak Reservoir with trout, the brood stock should be from the native fishes. The project may have some potential benefit to the extent that remnant native populations can be identified, and the project should focus more an tasks related to this objective.

Response: The project sponsors concur that it is important to know whether redband exist in the basin. The sponsors also concur in recognizing the value of using native trout broodstock for stocking purposes, and identifying any remnant native populations. In addition, the project sponsors are interested in determining the extent to which mitigation stocking has influenced these native fish.

Scientific merits aside, the CBFWA decision not to fund this project in FY 2000 was a programmatic one, in that it was determined authorization of the proposed work was not adequately supported under existing Program measures.

**Project: 20509 Hellsgate Big Game Winter Range Umbrella Project**
Sponsor: Colville Confederated Tribes, Fish & Wildlife Department

CBFWA tier: na
ISRP review: NA - Umbrella Proposal

ISRP Comment/Question: This umbrella proposal, intended to be an overall explanation of why a set of projects needs to be done, falls short in a number of ways. First is the relationship between past and proposed land acquisitions to each other. Do they tend to form continuous or connected parcels or are they essentially all independent of each other? The former is preferred.

Response: The history of the project was covered in Section 4 under past accomplishments and in Section 8: a, where various acquisitions were discussed. To date, having acquired over 18,000 acres of habitat. In addition, having a fifty year agreement with the Tribes to mange about 2,100 acres of tribal land along with 770 acres of mitigation land as a core area for sharp-tailed grouse breeding and brood rearing. With respect to past and proposed land acquisitions, they strongly tend to form continuous or connected parcels. It has always been our intent to block up our acquisitions as much as is feasible to provide both increased habitat protection and connectivity. As to the comments on what parcels are targeted, please see answer to similar comment under Colville Tribes performance contract for continuing acquisitions.

ISRP Comment/Question: Second, whether or not there are any potential benefits to other organisms by the proposed acquisitions is not even considered.

Response: The proposers are absolutely using “Target” or indicator species that represent whole guilds of species using various habitat types. The primary target species we are using and the guilds they represent are as follows:

Mule Deer:
Species benefiting include: Mule deer, sharp-tailed grouse, yellow warbler, downy woodpecker, northern oriole, burrowing owl, short-eared owl, Washington ground squirrel, upland sandpiper, golden eagle, badger, coyote, and bobcats.

Sharp-tailed Grouse:
Species benefiting include: Sharp-tailed grouse, mule deer, yellow warbler, downy woodpecker, northern oriole, borrowing owl, short-eared owl, Washington ground squirrel, upland sandpiper, and golden eagle.

Blue Grouse:
Species benefiting include: Ruffed grouse, white-tailed deer, sharp-shinned hawk, Copper's hawk, goshawk, pileated woodpecker, sapsuckers, great grey owl, flammulated owl, boreal owl, western bluebird, black-backed woodpecker, white-headed woodpecker and small mammals.

Mourning Dove:
Species benefiting include: Pheasant, morning dove, quail, cottontails, western kingbird, Meadowlark, boreal owl, bobolink, yellow-headed blackbird, northern harrier, avocet, phalarope, sandhill crane, Swainson's hawk.

Downy and Lewis Woodpecker:
Species benefiting include: White-tailed deer, ruffed grouse, sharp-shinned hawk, Cooper's hawk, goshawk, pileated woodpecker, sapsuckers, great grey owl, flammulated owl, boreal owl, western bluebird, black-backed woodpecker, white-headed woodpecker, downy woodpecker and Lewis woodpecker.

Yellow Warbler:
Species benefiting include: Yellow warbler, blue grouse, hairy woodpecker, great blue heron, white-tailed deer, elk turkey, northern goshawk, red-tailed hawk, spotted frog, beaver, muskrat, raccoon, red-winged blackbird, long toed salamander, meadow vole, tree frog, bats, and winter wren.

Bobcat:
Species benefiting include: Bobcat, yellow-bellied marmot, bushy-tailed wood rat, cotton-tailed rabbit, quail, golden eagle, and rattlesnake.

Mink:
Species benefiting include: Beaver, long-eared owl, flicker, pallid bat, western pipistrelle bat, long-legged bat, lessor goldfinch, ash-throated flycatcher, yellow-billed cuckoo, great egret, black-crowned night heron, great blue heron, Sylvan hair-streak butterfly, Viceroy butterfly, norther checkerspot butterfly, pale crescent butterfly, otter, mink, water shrews and black bear.

Bald Eagle:
Species benefiting include: Bald eagle and osprey.

Spotted Sandpiper:
Species benefiting include: Spotted sandpiper, Canada goose, snipe, osprey, bats, western toad, rubber boa, rattlesnake, raccoon, bald eagle, coyote, river otter, great blue heron, kildeer, greater yellowlegs, bank swallow, dipper, merganser, coot, watershrew, common garter snake, leopard frog and stripped skunk.

Canada Goose:
Species benefiting include: Canada goose, white pelican, Columbia River tiger beetle, gulls, caspian, forester's common and black terns, shorebirds, mallards and common loon.

**Project: 20517 Libby Fisheries Mitigation**
Sponsor: Montana Department of Fish, Wildlife and Parks

CBFWA tier: 3
ISRP review: NA - Umbrella Proposal

ISRP Comment/Question: This is an umbrella proposal for projects to mitigate the effects of Libby Dam on the Kootenai River system. It is well written and a good example of an umbrella. It lists the FWP and numerous other planning documents. It lists both the four projects under the umbrella (one a new proposal) and four Kootenai R. projects not under the umbrella. The obvious question is why these were not included.

Response: Only the Montana projects were included in the umbrella proposal that was created in response to the ISRP comments last year. The Montana projects were sufficiently similar to warrant combining them into one overall project. The CBFWA resident fish managers agreed to combine the Libby Mitigation project with the mitigation activities previously tied to the Libby component of the excessive drawdown mitigation project and the Libby technical analysis project. CBFWA agreed with the previous comments from the ISRP that combining these similar projects was warranted. These projects have now been combined (with the exception of the Kootenai Focus Watershed project that remains separate at the request of BPA, Ron Morinaka COTR).

ISRP Comment/Question: On the negative side, the umbrella does not give a clear picture of how the projects under the umbrella (and those that are not but might be) relate to each other. How the overall mitigation work is subdivided is not as clearly presented as one might want. The umbrella should identify the overall objectives in the basin and how each subproposal addresses the objectives.

Response: The related projects in Idaho are indeed coordinated to assure that efforts by IDFG and KTOI are complementary and to avoid duplication of effort. Coordination between the agencies should perhaps have been highlighted in the umbrella proposal, but the umbrella proposal was developed to combine the Montana projects and listed the Idaho Kootenai projects as critically linked projects. The negative comment from the ISRP pertained to the project's failure to show how the combined Montana projects relate to the Idaho projects in an overall objective for the basin. In the future, statements will be included that address this concern.

ISRP Comment/Question: On the negative side, the umbrella does not give a clear picture of how the projects under the umbrella (and those that are not but might be) relate to each other. How the overall mitigation work is subdivided is not as clearly presented as one might want. The umbrella should identify the overall objectives in the basin and how each subproposal addresses the objectives.

Response: The overall objective for the basin is to implement the Integrated Rule Curves for Libby Dam operation and the tiered flow approach for white sturgeon flow augmentation. The project managers also want to implement the Army Corps VARQ flood control strategy to allow operators to store more water in less than average water years to further enhance spring flows for anadromous species recovery without compromising reservoir refill probability. White sturgeon will be protected from extinction through conservation aquaculture by KTOI while attempts are made to encourage natural reproduction through tiered flows and monitoring by all the Kootenai project sponsors (IDFG, KTOI and MFWP). By combining VARQ with the IRCs and tiered flows, the operation of the basin will benefit all listed and petitioned fish stocks. A second overall objective is to implement non-operational mitigation actions, including fish passage improvements, protection of instream flows in Kootenai River tributaries, and habitat restoration. These actions have been partitioned by locality by the cooperating agencies.

**Project: 20552 Smolt Monitoring Program Umbrella**
Sponsor: Pacific States Marine Fisheries Commission, Idaho Department of Fish & Wildlife, Nez Perce Tribe and USGS

CBFWA tier: na
ISRP review: NA - Umbrella Proposal

ISRP Comment/Question: This proposal does not explain the goals and experimental design to reach the goals.

Response: Some of the comments were precipitated by the format for the proposals, which did not allow adequate description of background and history. Some inconsistencies in comments between projects were noted which is undoubtedly the result of the large number of projects in this process and the large number of reviewers. As an example, one component of the SMP, the Imnaha Trapping project, was approved for multiple year funding while the other components, including other trap and mark components were not recommended for multiple year funding. A programmatic review was suggested but the purpose of the SMP was not clearly understood, leaving the purpose of a programmatic review unclear. In addition, the ISRP did not recognize or identify any problems or deficiencies in recent programmatic reviews of the SMP. In any case, since the SMP is reviewed annually, the difference between the annual review and the programmatic review is unclear.

The SMP was originally designed through a joint regional effort of the state and federal fishery agencies, tribes, independent consultants, and BPA. The sampling facilities, efficiency of facilities, and management requirements were all incorporated in the design of the monitoring program. In addition, the design of the monitoring program is constructed around limitations on fish handling and sampling for listed and unlisted stocks under ESA section 10 permitting requirements. It is also designed around conditions and requirements of state water quality agencies for dissolved gas waivers. The program is not designed as an experiment, it is a monitoring program designed to meet the fish passage management needs outlined in the NW Power Planning Council Fish and Wildlife Program and the NMFS Biological Opinion. It is designed as a monitoring program within limitations to provide daily real-time information for fish passage management under the run off, flow, weather, precipitation, and power market condition of the particular year. The actual conditions and resultant operations are not predictable and do not lend themselves to experimentation. Therefore, an experimental design does not apply. The goals of the Smolt Monitoring Program are to provide (1) a consistent monitoring effort at four traps and seven dams in the Columbia River basin and (2) a consistent source of marked fish for monitoring travel time, passage timing, and survival in key reaches of the basin. The original and present purpose is to develop and maintain a long term, consistent and continuous database on smolt migration to facilitate real time fish passage management and long term mitigation and management decisions. All aspects of the SMP are related to the monitoring of smolts and not adult returns.

ISRP Comment/Question: With the way the umbrella and sub-proposals are set up it is not clear where the tags are being applied.

Response: This was a function of the required format of the proposals. For the SMP, fish are PIT tagged and released from the four traps, one dam (Rock Island Dam), and several key hatcheries in the Mid-Columbia River (Winthrop, Wells, Leavenworth, and Priest Rapids hatcheries). The purpose of these marked groups is to provide travel time, migration timing, and survival in key reaches of the Columbia Basin hydrosystem. This same set of data is produced for the SMP using the fish PIT tagged in the Snake River for the CSS (McCall, Rapid River, Imnaha, Dworshak, and Lookingglass hatcheries). Also, the ISRP needs to remember that the SMP is not a designed experiment, but an annual program of monitoring fish movement for real-time management of the hydrosystem.

ISRP Comment/Question: The hardware is still not in place for adequate detection of adult returns. There is a critical need to install adult detection facilities, with multiple detection devices in each fish ladder.

Response: The SMP is a program solely to monitor the smolt migration. The SMP from its inception was not designed to monitor adult returns because the number of marked fish and handling required would be prohibitive. The Comparative Survival Study (CSS) is designed to incorporate adult returns and develop smolt to adult survival estimates.

ISRP Comment/Question: The entire set of smolt monitoring projects needs to receive a programmatic review with one of the goals to create a central data repository that includes historical and raw data

Response: The SMP has received programmatic review by the NPPC Scientific Advisory Board. The SMP is designed to meet specific management needs identified in the NPPC Program and the NMFS Biological Opinion. Although the SMP has been and will continue to be reviewed, it should be reviewed in the context of meeting the fish passage management needs of the region including the BIOP and the NPPC Program as well as other management entity needs such as the state water quality agencies.

**Project: 20554 Hungry Horse Fisheries Mitigation Umbrella**
Sponsor: Montana Department of Fish, Wildlife and Parks

CBFWA tier: 3
ISRP review: NA - Umbrella Proposal

ISRP Comment/Question: This is an informative umbrella for the proposals that it covers. It would be much better if it covered the other proposals in the Flathead watershed, too. A map would be very helpful.

Response: Detailed maps of all project sites and descriptions of the working relationship between Flathead Basin agencies are available in documents cited in the umbrella proposals, but were not included in the umbrella because of proposal length limitations. The proposers felt that they could not go into sufficient detail in their proposals, even using the umbrella to further flesh out the information in the subproposals. Other pertinent literature could not be attached as per the proposal instructions. This is a good reason to put long-term projects on a three to five year review schedule so that only a subset of the many projects would be reviewed annually, thus allowing time for more detailed reviews.

ISRP Comment/Question: The hatchery needs to be pulled into the strategy pursued by the other groups in the subbasin. The Rosgen method should work here, but there is no evidence presented in the proposal that the method fairly represents reach characteristics of this drainage nor of its relevance to the ecology of the system. This classification method is size independent, and the major stream paradigm (River Continuum Concept) is explicitly size dependent.

Response: Although the Rosgen stream classification is size independent, the site-specific reference reaches used in stream restoration are size dependent. Stream channels are restored to mimic undisturbed stream sections, or when unavailable, reference reaches from similar basins (by stream order, drainage area, gradient and geological type).

ISRP Comment/Question: In comparison to efforts in other subbasins, this group should be commended for their cooperative efforts. However, the ongoing projects need a 5-year plan with a comprehensive review by a visiting peer review committee.

Response: The overall long-term plan is the Hungry Horse Mitigation and Implementation plan. The ISRP (then ISG) came to Kalispell approximately five years ago to perform a peer review of the overall mitigation program and provided many valuable comments. Another site visit would be welcomed and should be scheduled as soon as possible.

**Project: 8331900 New Fish tagging System**
Sponsor: National Marine Fisheries Service

CBFWA tier: 1
ISRP review: Do not fund. The research and development has already gotten too far ahead of implementation in this area. For the moment, the priority should be on deploying the required number of detectors in adult passage facilities so that the accumulation of desperately needed data on adult passage survival rates, and smolt to adult survival rates can accelerate.

ISRP Comment/Question: The research and development has already gotten too far ahead of implementation in this area. For the moment, the priority should be on deploying the required number of detectors in adult passage facilities so that the accumulation of desperately needed data on adult passage survival rates, and smolt to adult survival rates can accelerate.

Response: The development of technology that can yield data on adult passage is critical for answering survival and behavioral questions on adult salmon as they travel up the river, as well as on smolt-to-adult survival rates. This information is a high priority to the Fish and Wildlife Program. At present, there are no detectors (transceivers) available that can be deployed in most of the adult passage facilities.

NMFS tried in the past to design an interrogation system to collect these data based on the 400-kHz PIT-tag technology, which is currently used by the Columbia River Basin; however, the read range was insufficient for detecting tags in fish ladders. This is one of the main reasons why the fisheries community decided to switch to the ISO-based 134.2-kHz technology.

The current interrogation systems for juvenile salmon will be converted to the ISO-based 134.2-kHz technology in time for the 2000 smolt outmigration. The two current interrogation systems for adult salmon (one is located at Lower Granite Dam and the other at Bonneville Dam) that used 31-cm flumes will be converted in time for the 2001 return migration. Although these sites interrogate adult salmon, the same PIT-tag equipment is used as the sites that interrogate juvenile salmon. Project number 9701000 (PIT Tag System Transition) covers the work associated with converting all of the sites for juvenile salmon and these two sites for adult salmon. The stationary transceivers that will be installed at these sites are manufactured by Destron-Fearing and have been thoroughly evaluated. These stationary transceivers took three years (1996-1998) to develop from basic prototypes to finished production units that will meet the requirements of the Columbia River Basin's fisheries community.

Project number 8331900 is requesting funds for a work element (Objective 1) to develop ISO-based stationary transceivers that will perform in locations where the above Destron-Fearing transceivers do **not** function (e.g., the orifices within fish ladders). Tas the ISRP states, the goal is to develop a transceiver system that, once deployed, will "accumulate desperately needed data on adult passage survival rates" as well as help researchers answer other questions on adult passage. The major goal is to develop an interrogation system that will detect fish in the orifices and other areas within fish ladders. The NMFS presently does not have a finished production transceiver system developed; they are still in the prototype stage of development. The NMFS expects to have a finished product by the end of 2000 or early in 2001. They plan to install an interrogation system that will cover one ladder at Bonneville Dam for 2001 and all of the ladders at Bonneville Dam for 2002 when fish tagged with ISO tags are likely to start returning in statistically relevant numbers.

Because the timely development of a system for interrogating adult salmon in fish passageways is critical to the Basin, chances of success are increased by using an approach that involves parallel development of three transceiver systems. Destron-Fearing, using the system they developed for juvenile salmon as a starting point, is developing one of the three systems. The NMFS is providing a contract to them in order to encourage them to keep working on improving their product. The other two systems are cooperative ventures NMFS has with two electronics engineering contractors, Patten Engineering and RF Engineering. The objective with these transceiver systems is to design them so they have the flexibility to cover a range of known applications (e.g., orifices, overfall weirs, and vertical slots) and to build in the ability to add functions so that it will be relatively easy to adapt them for future applications.

There are a number of steps that need to be completed to get to a finished production transceiver system or systems. The first step is to evaluate the prototypes this fall in the exit ladder of the Adult Sampling and Monitoring Facility at Bonneville Dam. The next step is to do further development based on the results of the fall testing. These beta-level prototypes would then be tested in the spring of 2000. If more development were needed, then the beta-level prototypes would be retested in the summer. Like the transceiver systems for juvenile salmon, these systems will be tested for tag-reading efficiency with both tagged drones and fish, electronic tests to confirm that data through-put times, diagnostic capabilities, and read range will be sufficient to meet the requirements of the Columbia River Basin's fisheries community. The NMFS is seeking reading efficiencies of >90% in 61-cm fish ladder orifices and reading ranges of >30 cm over the entire orifice opening. The transceivers will also undergo environmental testing and other electronic bench tests in the laboratory. For example, the transceivers must be able to operate in temperatures from -10°C to 50°C. All of the beta-level prototype transceivers that pass these tests will then be manufactured into a finished production transceiver system or systems. This involves packaging and some minimal engineering changes.

The above information should make it clear that at present there are no detectors (transceivers) available that can be deployed into most of the adult passage facilities. The same ISO-based detecting equipment used for the interrogation systems monitoring juvenile salmon will also be installed to replace the current equipment at the sites at Lower Granite and Bonneville Dams where the adult salmon must pass through 31 cm flumes to be detected. However, it needs to be emphasized that this equipment will not work in the orifices of fish ladders.

ISRP Comment/Question: The programmatic need for the work should be more clearly explained. Putting this work in the context of the related project 9701000, PIT Tag System Transition, would help.

Response: It has been indicated above that Project 9701000 is responsible for replacing the current 400-kHz interrogation systems for juvenile salmon and the two sites currently collecting data on adult salmon. The NMFS personnel on Project 8331900 will continue to assist BPA in this transition (Objective 3 in the above list). The NMFS will assist BPA in the evaluation of the transceivers after they are installed.

PIT-tag technology plays an integral part in the NMFS Recovery Plans. It is needed to collect data for the management and restoration of salmonids and other fish stocks. For example, it is used to collect survival and migration timing information on stocks to evaluate water management strategies and fish passage/collection facilities. The Recovery Plans call for similar information to be collected on adult fish. As the ISRP report (p. 2) indicates, the need for this information is urgent and currently is very limited ("The only ongoing, systematic, large scale effort at adult PIT tag monitoring is at Lower Granite Dam…"). This project's goal for Objective 1 is to develop an interrogation system for adult salmon that, like the interrogation system for juvenile salmon, could be installed at multiple dams, would be a hands-off operation, and would operate 24-hours a day. The experience gained during the development and evaluation of the transceivers developed for replacing the juvenile system (done under Project 9701000) has been a tremendous aid in the development of the transceivers for adult salmon. For example, most of the electronic tests that are being used were initially developed while evaluating the other transceivers.

ISRP Comment/Question: It is not clear how results will be evaluated nor is it clear that the proposed work can be completed in a timely manner. A detailed time line should be prepared and a monitoring plan implemented.

Response: Approximately every 4-6 months (i.e., fall 1999, spring 2000, and summer 2000) the three transceiver systems will undergo a battery of electronic and reading-efficiency tests to determine if they meet the requirements of the Columbia River Basin. The beta-level prototypes will also need to perform a number of diagnostic tests that will help in the operation and maintenance of the final products once they are installed.

Preliminary read-range tests were done in January (1999) with the Destron-Fearing and Patten-Engineering transceivers. The former system failed the read-range test as the reinforcement bar in the weir wall affected the system. The Patten-Engineering system read >30 cm over the entire orifice opening. These preliminary results indicate that the time line outlined above for transceiver development and installation of detectors at Bonneville Dam is reasonable.

The general time line is described above. The reviewers should remember that, as with most research and development projects, it is impossible to give a precise time line. There are time constraints on this research project for any installation of equipment in the main ladders because of limitations of a 1-2 month window in the winter when these ladders are dewatered. That is why the initial evaluations will occur in the exit ladder of the Adult Sampling and Monitoring Facility, which can be dewatered during the year.

ISRP Comment/Question: The proposal should inform the reviewers if the new ISO system is not capable of detecting the old tags.

Response: None of the ISO-based systems, neither the transceivers being installed for juvenile salmon nor the ones being developed by this project for adult salmon, will read 400-kHz tags. The two technologies are quite different.

ISRP Comment/Question: It is not clear if the existing 400-kHz detector they propose to take out of Bonneville is for juveniles or adults.

Response: This question is related to Objective 2 of the project (see above). The detector in question is the flat-plate detector for juvenile salmon. This detector needs to be in place for the Year 2000 smolt outmigration.

ISRP Comment/Question: The reviewers understand that there are many PIT-tag technologies available worldwide. Considering these available technologies, they should provide a review of the availability and suitability of these systems to the application of monitoring juvenile and adult salmon in the Columbia River Basin.

Response: Although many companies manufacture PIT tags, very few companies manufacture PIT-tag transceivers that might potentially be able to read tags under the conditions present in the Columbia River Basin. These conditions are quite different (harsher and more variable) than the reading conditions present for livestock and pets. Therefore, there are no off-the-shelf products that can be purchased that will work for the interrogation needs of the Columbia River Basin. This is why BPA and then PSMFC had to submit requests for proposals for developing the ISO-based stationary and portable transceivers, respectively.

At the beginning of the research directed at interrogation of adult salmon, NMFS contacted all of the companies that had responded to the stationary and portable transceiver requests. Transceivers were then purchased from some of these companies for evaluation. During the spring and summer of 1998, NMFS evaluated the transceivers produced for Project 9701000 as well as transceivers from two other companies. The engineers analyzed and tested the circuitry of the different transceivers. In addition, knowledge regarding equipment limitations was gained by testing the transceivers with various antenna configurations. This evaluation revealed three potential systems that were then tested more thoroughly at an interrogation site. Two of these systems failed these tests. The manufacturers were contacted and only one (Destron-Fearing) expressed interest in doing any more development on their product. Unfortunately, it is necessary to be vague here for proprietary reasons. Thus, NMFS decided that the best approach was to pursue transceivers systems from Destron-Fearing and Patten Engineering whose system had passed the tests. In addition, NMFS decided to continue with their own design using a local specialty engineering firm to develop the analog portion of the transceiver. There is confidence that at least one of these systems will be able to meet the interrogation needs of the Columbia River Basin in time to be able to interrogate returning ISO-tagged salmon in the orifices of fish ladders.

**Project: 8335000 Nez Perce Tribal Hatchery**
Sponsor: Nez Perce Tribe

CBFWA tier: 1
ISRP review: Do not fund. The proposal is not scientifically sound. The inadequacies in the FY99 proposal remain. While the proposal contains language to the effect that the ISRP endorsed the project, in point of fact the ISRP was critical of the proposal in FY99 (see ISRP 98-1 Appendix A, page 75).

ISRP Comments/Question: The inadequacies in the FY99 proposal remain.

Response: Those items that the ISRP assessed as inadequacies were addressed by the Nez Perce Tribe (NPT) in the budgeting process for FY1999. A response to each issue discussed by the ISRP on the FY1999 proposal (see ISRP 98-1, Appendix A, page 75) was requested by Bonneville Power Administration (BPA) and submitted to the Northwest Power Planning Council (NWPPC) along with the budget. Whether the ISRP and peer review group reviewed the response is unknown. In any case, after reviewing the FY1999 comments and response, the project sponsors do not believe that the allegations of inadequacies based on previous comments made on the FY1999 proposal are substantiated

ISRP Comments/Question: While the proposal contains language to the effect that the ISRP endorsed the project, in point of fact the ISRP was critical of the proposal in FY99 (see ISRP 98-1, Appendix A, page 75).

Response: The proposal does not state that the ISRP endorsed the project. An independent review is mentioned twice in the proposal, but both instances refer to the results of the independent review undertaken as part of a three-step review process initiated by the NWPPC. The NWPPC's three-step process is described in the NWPPC Annual Implementation Work Plan for FY1998 (NWPPC 1997, p. 5 - 9). As part of that process, the proposers are requested to respond to questions developed by the ISRP in their FY1998 review (ISRP 1997), as well as to other questions. Apparently, this year's ISRP (or peer group) was unaware that such a process was implemented by the NWPPC, and that Nez Perce Tribal Hatchery (NPTH) underwent substantial independent scientific review in that process. This fact should have been evident from a careful reading of the proposal's text and references.

The ISRP and peer group may believe that their annual review of project proposals is the only independent scientific review group in the basin, but this is not true. The NWPPC attempted to engage members of the ISRP for the review of the NPTH program as part of the three-step process, but members of that panel were unavailable. As an alternative, the NWPPC contracted with the Pacific Northwest National Laboratory, Ecology Group (PNNL) for an independent review. The Council appeared to be satisfied that the PNNL's independent scientific review met their recommendations for the process and provided the information necessary to proceed with final design as indicated by the NWPPC's January 28, 1998 letter to Tribal Chairman Samuel Penney, and BPA Program Manager Bob Lohn:

> "In recommending Fiscal Year 1998 funding for final design of the Nez Perce Tribal Hatchery, the Council acknowledged that the scientific questions and concerns identified in the Council program; in the Independent Science Review Panel review; in the Council's policy recommendations in the Fiscal Year 1998 Annual Implementation Work Plan; and in the conditions identified by the Council in approving the Nez Perce Tribal Hatchery Master Plan, have been adequately addressed in documentation provided from the Nez Perce Tribal Hatchery planning process. This was verified by an independent review conducted by the Pacific Northwest National Laboratory, Ecology Group."

ISRP Comments/Question: The proposal claims to have the blessing of the ISRP (which is not true) and others, but many of the "innovative" approaches described have not been proven to yield greater survival of released fish.

Response: The proposal did not claim the blessing of the ISRP as discussed more fully in the previous response.

In regard to the proposal's discussion of innovative approaches (Section 8.f., Methods and Section 8.g., Facilities and Equipment), these are consistent with many of the guidelines (especially guideline numbers 1, 2, 6, 7 and 10) embraced by the Scientific Review Team in the Review of Artificial Production of Anadromous and Resident Fish in the Columbia River Basin (SRT 1999). The Scientific Review Team (SRT) is a subgroup of the NWPPC Independent Scientific Advisory Board (ISAB). Several members of the ISAB Scientific Review Team (Goodman, Lichatowich, Riddell and Williams) are also members of the ISRP. Apparently, the peer review group and ISRP panel member(s) reviewing the NPTH proposal are either not familiar with recommendations made in other forums regarding hatchery reform, or are using this budgeting review as an opportunity to challenge those recommendations.

ISRP Comments/Question: Furthermore, the technical-scientific background section and the rest of the proposal depend on references that are almost exclusively from gray literature rather than from the peer-reviewed open literature.

Response: The proposal references project specific documents developed to 1) accomplish NWPPC objectives in developing a supplementation program, 2) meet concerns identified in the NWPPC's Master Plan process, the NEPA analysis, 3) obtain concurrence with the Endangered Species Act, and 4) respond to the NWPPC's three-step process and development of the final design. As such, they are not the types of documents that are commonly submitted to the peer-review open literature.

ISRP Comments/Question: Project advocates believe they will achieve greater efficiency and effectiveness than typical hatchery operations; however, typical hatchery programs have had many generations of experience to alter programs for efficiency and are arguably highly efficient. Only a rigorous monitoring and evaluation program will determine whether the proposers' hopes can be realized.

Response: Typical hatchery programs, utilized primarily for harvest augmentation, have many generations of experience and are highly efficient at spawning, incubating and rearing fish for the purposes of harvest augmentation, ***but not for the purposes of utilizing these fish to supplement and rebuild the wild/natural runs.*** The project sponsors believe there is much to learn about the use of supplementation in rebuilding the wild/natural runs and agree that a well-designed monitoring and evaluation program will determine whether these hopes can be realized.

ISRP Comments/Question: The proposal makes various unsubstantiated claims, such as p.19, lines 8-10: "Although returns [of potential brood fish] are predicted to be extremely low for these years [1999 and 2000], the improved

juvenile survival and beneficial progeny: parent return ratio offered by hatcheries justify efforts to survive [sic] the broodyear [sic] through artificial propagation." If this were so, wouldn't there be large numbers of salmon from the many, many existing hatcheries? At this point the proposers ignore the problem of inferior post-release fitness of the hatchery-reared fish, though they acknowledge it elsewhere.

Response: A recent symposium held on the status of hatcheries operated under the Lower Snake River Compensation Plan (USFWS 1998) found that, where comparisons were made between wild and hatchery populations, the progeny**:**parent return rate was better for hatchery programs than for the wild populations. This is not to imply that smolt-to-adult survival rates are better for hatchery fish, or that hatchery fish do not succumb to a high post-release mortality, or that the beneficial progeny**:**parent return rate results in large numbers of returning salmon. It does imply that conditions faced by the wild populations in the Snake Basin are severe and that hatcheries can offer a mechanism to avert extinction. This information seems to be understood and accepted by biologists familiar with conditions in the Snake Basin. Several members of the ISRP were present as panel members during the symposium (USFWS 1998) and should be aware of these conclusions.

ISRP Comments/Question: Another unsubstantiated statement (beginning on next-to-last line of p. 23): 'NPTH will rear fish at a density that is a third as much [as the 9.9 kg/m3 recommended by NMFS] and should impart economic efficiency to the hatchery....', yet the proposers do not define how the benefit will occur.

Response: Although the project sponsors believe that lower density rearing at NPTH is beneficial in decreasing disease and post-release mortality, the final design process has shown that the cost of lower density rearing is one of the most expensive of the NATURES based features. Nevertheless, the NATURES Design Team also emphasized that low density rearing is one of the most critical aspects to incorporate in the design. The NATURES Design Team is an interagency panel of experts in fish production and the evolving NATURES rearing strategies that were assembled specifically for the NPTH final design. They established a set of biological criteria proven to enhance post-release survival that would guide development of the engineering designs. They also reviewed and provided recommendations to the final design as it evolved.

ISRP Comments/Question: The proposers also claim that by keeping within natural 'carrying capacities' they will not impact populations of wild fish. Carrying capacity is difficult to measure and altering density at any natural population level through the addition of propagated fish will no doubt influence the population in nature.

Response: As in ISRP Comment 3, the reviewers do not appear to be informed about the recommendations made by the NWPPC's scientific review team (SRT) reviewing artificial production in the Columbia Basin. Guideline 8 in the artificial production review (SRT 1999) states:

> "Hatchery release strategies need to follow standards that accommodate reasonable numerical limits ***determined by the carrying capacity of the receiving stream*** to accommodate residence needs of non-migrating members of the release population." [emphasis added]

Although the ISRP may doubt that keeping releases within carrying capacity can be done and that by doing so impacts can be minimized, it is the very same recommendation made by members of the independent scientific review team assembled by the NWPPC and assigned to guide policy on hatchery practices. Moreover, another independent group, the Independent Science Advisory Board (ISAB) convened by the NWPPC and NMFS made this same recommendation to the NWPPC in order to ensure that artificial production would be *consistent with a sound scientific foundation*. The ISRP's comment clearly contradicts the recommendations of these two independent science groups. Nez Perce Tribal Hatchery incorporated this concept of release limitations based on carrying capacity since its inception and not as a result of recommendations made in the artificial production review.

ISRP Comments/Question: They also claim they will mimic natural conditions of temperature etc., yet stream temperatures are not the same from year to year, and from site to site.

Response: Again, mimicking ambient temperatures is also a guideline for hatchery operation recommended by the ISAB to the NWPPC. Yet criticism is leveled at the NPTH proposers for attempting to implement these very same recommendations. Guideline 6 in the Artificial Production Review (SRT 1999) states:

> "Supplementation hatchery policy should utilize ambient natal stream habitat temperatures to reinforce genetic compatibility with local environments and provide the linkage between stock and habitat that is responsible for population structure of stocks from which hatchery fish are generated."

The rationale for the guideline discusses the importance of temperature on life history forms and finds that:

> "...Hatchery management policy should adhere to using the ambient temperature regime of their natal environments to maintain the compatibility of hatchery fish with the natural system and the effectiveness of hatchery contribution to the natural spawning population."

As in other aspects of NPTH, the ability to implement this feature was part of the original plan for the facility. Later documents (such as the SRT 1999) verify that these features and considerations remain sound.

ISRP Comments/Question: Other specific comments include: P. 22, line 5 - 'Phase III (11-20 years) will create opportunities for harvest ...' Is this a departure from the hatchery's 'supplementation' objective? If so is it justified?

Response: It is unconscionable that a science review panel tasked with the evaluation of the largest salmon recovery program in the Pacific Northwest does not understand the importance of salmon to the northwest aboriginal culture and requires a justification to substantiate this use of fish. However, the proposal was not remiss in establishing that harvest is consistent with the hatchery's supplementation objective. The proposal abstract describes harvest as a goal and objective for NPTH under the third bullet item (p 12, line 13 - 14):

> "Provide long-term harvest opportunities for Tribal and non-tribal anglers within four salmon generations following project completion."

A brief justification for harvest as a necessary component of NPTH is presented in Section 8.a., Establishing a Need (p. 14, lines 8 - 14):

> "Salmon and other migratory fish species are an invaluable food resource and an integral part of the Nez Perce Tribe's culture. Anadromous fish have always made up the bulk of the Nez Perce tribal diet and this dependence on salmon was recognized in the treaties made with the Tribe by the United States. The historic, economic, social, and religious significance of the fish to the Nez Perce Tribe continues to this day, which means that the decline of fish population in the Columbia River Basin has caused a substantial, unique and detrimental impact on the Nez Perce way of life."

ISRP Comments/Question: Bottom of p. 25 - A 100% FTE administrative assistant/secretary for a fish hatchery seems out of line.

Response: This person provides personnel support for travel, records, preparation of resolutions, contracts, purchase orders, tracking and filing of records, data base development, records of reports, copying and distribution of records, typing assistance, phone services, fax, modem support, vehicle registration and leases, maintenance of equipment, tracking orders, budget tracking and other duties as assigned. This person also assists in the supervision and training of high school interns and temporary and permanent staff.

ISRP Comments/Question: Bottom of p. 27 and budget table, p. 8 - Travel cost of $36,407 seems excessive for building and beginning to operate a fish hatchery.

Response: The costs for travel are reflective of the need to attend various basin-wide forums to participate in artificial production issues as well as involvement in developing this specific facility. A breakdown of destinations, personnel involved, costs, and justification is presented in the annual budget submitted to BPA. It should be kept in mind that production forums involving NPTH and other tribal supplementation programs (e.g., U.S. v. Oregon, Artificial Production Review, NWPPC meetings) are typically held in Portland, Oregon and that a typical two-day meeting with a round trip flight costs $575.00.

ISRP Comments/Question: Planning costs of $8.87M to date certainly seem excessive.

Response: Most of the costs have occurred as a result of the planning process required to satisfy the NWPPC and BPA, including NEPA compliance, necessary to implement a supplementation program funded under the Northwest Power Act.

References:

Independent Scientific Review Panel (ISRP). 1997. Review of the Columbia River Basin Fish and Wildlife Program as directed by the 1996 amendment of the Power Act. Northwest Power Planning Council, Portland, Oregon. June 15, 1997.

Nez Perce Tribe Department of Fisheries Resources Management (NPT). 1997. Response to questions for the three-step process review of the Nez Perce Tribal Hatchery, dated October 31, 1997. Attachment to letter from Samuel N. Penney, Chairman Nez Perce Tribe to John Etchart, Chairman Northwest Power Planning Council dated November 3, 1997.

Northwest Power Planning Council. 1997. Columbia River Basin Fish and Wildlife Program. Fiscal year 1998. Annual implementation work plan. Document number 97-14. Portland, Oregon.

Pacific Northwest National Laboratory Ecology Group (PNNL). 1997. A review of "Response to questions for the three-step process review of the Nez Perce Tribal Hatchery". Document prepared or Northwest Power Planning Council Staff dated December 5, 1997.

Scientific Review Team (SRT). 1999. Review of salmonid artificial production in the Columbia River basin as a scientific basis for Columbia River production program. Northwest Power Planning Council, Portland, Oregon.

United States Fish and Wildlife Service (USFWS). 1998. Proceedings of the Lower Snake River Compensation Plan status review symposium. Lower Snake River Compensation Plan Office, Boise, Idaho.

**Project: 8335003 Nez Perce Tribal Hatchery Monitoring And Evaluation**
Sponsor: Nez Perce Tribal Fisheries/Watershed Program

CBFWA tier: 1
ISRP review: Do not fund. The proposal is not scientifically sound.

ISRP Comments/Question: The proposal is not scientifically sound. This is a proposal for monitoring and evaluation of a proposed hatchery. If this hatchery is to be built, its results should be monitored and evaluated. This project is large; its magnitude may not be recognized by the proposers. The numerous objectives seem well selected, except for parts of the first objective, which do not appear to be appropriate, engineering design and construction presumably should fall under proposal 8335000.

Response: The ISRP comments do not highlight why the proposal is "not scientifically sound." It is stated that "the approaches and methodological strategies are generally well described, but some field techniques are unclear." A majority of the ISRP comments address a need for greater detailed explanation of techniques and do not identify any objectives that are scientifically off-base or lacking. Independent Review (NPPC 3-step process) of the Monitoring and Evaluation Plan for Nez Perce Tribal Hatchery (Steward 1996) praised its comprehensive nature and discussion. The Independent Review (PNNL 1997) found that, "The document that best illustrates the NPT commitment to ecologically sound operation is the Monitoring and Evaluation Plan." They found that, "The project assumptions for all issues are clearly stated and documented. The critical uncertainties are listed and risk levels for each uncertainty is documented. Performance criteria variables are listed and explained. Experiments and monitoring plans are explained for every issue. Protocols for these activities are described in the plan."

The project sponsor is well aware of the magnitude of the project. The formal study design (Steward 1996) addresses a total of 83 parameters at full implementation and would require a multi-million dollar proposal. The FY2000 proposal is reduced in scope and focuses on 30 high priority performance variables. The study design acknowledges the potential challenges with complete funding and provides a tiered (Level I –III) implementation plan based on the importance of critical uncertainties and available funding. The NMFS Biological Opinion on Artificial Propagation in the Columbia River Basin (NMFS 1999) has required a Level II implementation of the Nez

Perce Tribal Hatchery Monitoring and Evaluation Plan (Steward 1996) for NPTH production. The proposal covers the scope of tasks required for Level II implementation.

The first objective of this project is to **coordinate** M&E planning and implementation with the following agencies: BPA, IDFG, USFWS, NMFS, NPPC, CBFWA, CRITFC, BLM, COE. The input/coordination of the physical monitoring and evaluation requirements into the design and construction processes is critical to the ability to effectively monitor the hatchery production with the least amount of handling/stress on fish. The ISRP may have misunderstood the second paragraph in Objective 1, Section e. "Proposal objectives" (page 18) where it states, "Overall NPTH program coordination involves the following activities: engineering design, construction, monitoring and evaluation, research, and fish culture."

ISRP Comments/Question: The approaches and methodological strategies are generally well described, but some of field techniques are unclear. For example, it is not made clear in all cases what kinds of gear will be used to sample fish, what the sampling design will be or what the statistical methods will be.

Response: The project sponsor acknowledges the lack of detailed field techniques in the proposal; however, this is a function of allowed space and the ability to comprehensively describe a 224 page study plan in 10 pages. The proposal was formatted to clearly describe the project's objectives and tasks. As the ISRP stated, "This project is large... ." It is impossible to describe each and every one of the field techniques to be used in the very limited space allowed. Due to the size of this project it was more important to describe the overall approaches and methodological strategies than go into the specifics of "what kinds of gear will be used to sample fish." Project sponsors are qualified professionals and know what type of equipment to use.

ISRP Comments/Question: From a programmatic standpoint, the panel was concerned about continued funding of such artificial production activities like this one without evaluating its effects on wild stocks. It would be dangerous for the Council to say that the region can more aggressively pursue artificial propagation and then manage diversity back into the populations. The region should be doing all it can to preserve natural production.

Objective 2 - The monitoring of genetic structure seems to have only one basis. That is, that if there is a loss of genetic variation then the genetic information will be available to make crosses required to re-constitute the desired variation. That is not the appropriate view for managing a program that is directed to increasing abundance while protecting natural variability. Methods for this objective include monitoring of stocks both from in-basin, and out-of-basin sources. Out-of-basin sources should not be permitted in programs directed to protection of gene diversity and natural production. Again, the genetic monitoring will not provide any insight into the " ... effects of introducing hatchery-reared chinook and coho salmon." The "determinations" and answers outlined cannot be obtained by the proposed methods.

Objective 3 - This is a plan based on a naive foundation that managers can develop what is needed to maintain diversity in these runs. Why not think in terms of using brood stock from the different locations, or brood stock that returns to the different locations?

Response: It is clear that ISRP reviewers did not take into account that spring and summer chinook salmon within the Clearwater basin have been re-established after being extirpated by the Lewiston dam. Therefore, their comments addressing preservation of the natural genetic structure do not apply. However, the NPTH Monitoring and Evaluation project is designed to describe the life history characteristics and determine whether desired life history traits can be cultivated through supplementation and maintained by the natural system, or whether external influences will prevent their expression. The whole idea behind supplementation is the use of artificial propagation in an attempt to maintain or increase natural production while maintaining the long-term fitness of the target population and keeping the ecological and genetic impacts on non-target populations within specified biological limits.

ISRP Comments/Question: Objective 4 - Although left unstated, monitoring in both treatment and control streams or the impact of improved ocean conditions must be incorporated, or other out-of- basin improvements will not be included in the accounting.

Response: Out-of-basin performance is the limiting factor for chinook salmon in the Snake River. Smolt performance through the mainstem corridor is a key variable in the evaluation of the NPTH and is being monitored with PIT tags. Other out-of-basin conditions/impacts are being tracked with a treatment and control stream study design. As stated in the methods, there will be density monitoring of juvenile fish in permanent index reaches of selected treatment and control streams. Adult weir monitoring is scheduled for Lolo Creek, Eldorado Creek, Newsome Creek, Meadow Creek, American River, Lapwai Creek, Potlatch River and Clear Creek. Of which both treatment and control streams are represented. Although left unstated, spawning ground surveys and harvest are scheduled for selected treatment and control streams.

ISRP Comments/Question: Objective 5 -- Calculations of parr-to-adult survival rates seem not to take adult harvest into account.

Response: Monitoring harvest by sport, commercial, and tribal fishermen was identified in Objective 4 and will be used in the calculations of parr-to-adult survival rates.

ISRP Comments/Question: Objective 6 -- How will recruits (at what life stage?) per spawner be measured? Objective 7 -- The description of methods is too vague. What "intraspecific interactions" will really be measured? "Direct interaction of hatchery and wild salmon" is mentioned, but there is no explanation of how they're going to observe these behaviors and what direct behavioral parameters will be measured. Will there be treatment and control streams? Treatment and control stream sections? A genuine plan for this objective does not seem to have been made. Objective 8 - Monitoring for disease seems to be the "thing to do." However, it never makes a difference until an epizootic occurs and then you don't need monitoring to see it. This kind of work should be directed to preventing rearing conditions that result in epizootics. Furthermore, the methods are not spelled out. The statement that "sampling, diagnostic, and statistical analyses will conform with NWFH Survey protocols and procedures" doesn't constitute a discussion of methods. Objective 9 - Don't we already know that predator abundance will follow prey abundance? Again, it seems that the appropriate question concerns the significance of this predation, and what can be done about it short of eliminating (probably impossible) other species? Also, while sub-objectives are stated, there is no discussion of methods. Objective 11- Methods for estimating stream productivity for salmonids are not satisfactory.

Response: The list of ISRP comments grouped under Comment 6 focuses on what specific type of methods will be used to carry out tasks. Again, the lack of available space precluded a comprehensive discussion of methods being used; however, the Monitoring and Evaluation Plan for the Nez Perce Tribal Hatchery (Steward 1996) does include a detailed explanation of methods. Natural spawners, density monitoring (snorkeling) and/or screw trap monitoring will provide us with summer parr and/or pre-smolt and smolt numbers. Screw traps and PIT tags are used to look at migration issues; CWT's and PIT tags are used for growth. A discussion of disease monitoring methods should not be necessary as part of this proposal, the project sponsors have stated in the proposal that the project sponsors will work in conjunction with the Dworshak Fish Health Center (DFHC) and follow the National Wild Fish Health Survey protocols. Predator/prey abundance is being monitored not to document the relationship of predator/prey dynamics, but rather to adjust the stream productivity and carrying capacity estimates within both treatment and control streams. Distribution and abundance will be monitored through snorkeling permanent index reaches of selected treatment and control streams and with weirs. The project sponsor disagrees with this ISRP statement regarding methods for estimating stream productivity. The methods for estimating stream productivity are comprehensive.

**Project: 8343500 Operate And Maintain Umatilla Hatchery Satellite Facilities**
Sponsor: Confederated Tribes of the Umatilla Indian Reservation

CBFWA tier: 1
ISRP review: Delay funding until the proposal addresses specific deficiencies noted in the comments. This project should be included in an Independent Programmatic Review of the Umatilla and Walla Walla hatchery programs.

ISRP Comment/Question: This project should be included in an Independent Programmatic Review of the Umatilla and Walla Walla hatchery programs.

Response: This project has already been evaluated five times as part of comprehensive program planning. These efforts include the Umatilla Fisheries Restoration Plan (Boyce 1986), Umatilla Subbasin Plan (CTUIR 1990), Umatilla Hatchery Master Plan (CTUIR/ODFW 1990), Wy-Kan-Ush-Mi Wa-Kish-Wit, Tribal Restoration Plan (CRITFC 1995), and in the subbasin plan updates provided in the CBFWA FY2000 Annual Implementation Work Plan. All of these documents have prioritized the need to operate and maintain juvenile acclimation/release and adult holding/ spawning facilities as a critical component for continued success of the Umatilla restoration program.

ISRP Comment/Question: A number of objectives listed here are also covered in other proposals, which raises the question of whether there is duplication of effort or a lack of coordination.

Response: The Umatilla Hatchery Satellite Facilities Operation and Maintenance (UHSFO&M) project has two primary objectives: 1) increase adult salmon and steelhead survival and homing to the Umatilla River Basin, and 2) provide eggs for the Umatilla River production program. Associated with Objective 1 are four primary tasks: 1) hold (acclimate) and feed groups of juvenile salmon and steelhead at acclimation facilities prior to release in the Umatilla River Basin, 2) collect species composition, marks, size and numbers of fish trapped at Westland Canal juvenile facility during trapping operations to give an indication of outmigration timing, 3) determine total survival, contribution to ocean and Columbia River fisheries and escapement to the Umatilla River and other terminal locations of all coded-wire tagged groups released into the Umatilla River Basin, and 4) maintain the satellite facilities in good working order.

In regards to Task 1, ODFW transports juvenile salmon and steelhead from Umatilla and other hatcheries to the acclimation facilities. As co-managers, CTUIR operates the facilities. The number of juveniles to be released, release dates, fish size, and other acclimation and/or release strategies are closely coordinated with ODFW and are incorporated into the Umatilla Hatchery and Basin Annual Operation Plan (UH&BAOP) (FY2000 BPA proposal; sections 7, 8b, c, d, f & 10). With respect to Task 2, this project monitors species composition, marks, size, and the numbers of fish trapped at Westland Canal juvenile facility during trapping operations. In 1999 and in previous years, this effort was coordinated and shared with Project 8902401 (Umatilla River WEID/Screens Monitoring and Evaluation). In FY2000, this project proposes to continue monitoring juvenile outmigrants at the Westland Canal juvenile trap during trapping operations, while Project 8902401 will monitor outmigrating juvenile salmonids prior to the trap being opened. Data will be shared and summarized to give an indication of juvenile outmigration timing (FY2000 BPA proposal; Sections 3, 7, 8c, 8f, and 10).

With respect to Task 3, there has been duplication of effort. Beginning in FY2000, this project will no longer determine adult survival and contribution. This project will continue to collect snouts and associated data from coded-wire tagged fish and calculate expansion factors and report the information to Pacific States Marine Fisheries Commission, but Project 9000500 (Umatilla Hatchery Monitoring and Evaluation) will determine and report adult survival, contribution, and escapement rates in their annual report to BPA. This project is also responsible for maintaining the satellite facilities in good working order. This effort is shared and closely coordinated with Project 8343600 (Umatilla Passage Facilities Operation and Maintenance) (FY2000 BPA proposal; Sections 3, 8b, 8c, 8f, and 8g). This project does most of the routine and preventative maintenance, while Project 8343600 performs much of the emergency and heavy maintenance requiring large equipment.

Associated with objectives 2 are 3 primary tasks: 1) collect, hold and artificially spawn broodstock, 2) assist ODFW in collecting samples from broodstock for disease analysis, and 3) maintain the facilities in good working order.

In regards to Task 1, CTUIR and ODFW personnel (Project 8802200) collect and transport Umatilla River broodstock for holding/spawning at Three Mile Dam, South Fork Walla Walla and Minthorn adult holding/spawning facilities. These facilities are operated by CTUIR in cooperation with ODFW (FY2000 BPA proposal; sections 3, 8b, 8c, 8e, and 8f). Broodstock collection rates and strategies, numbers of eggs to collect, brood treatment strategies, etc., are closely coordinated with ODFW and FWS and are incorporated into the UH&BAOP. The long term goal is that all chinook and steelhead eggs needed for the Umatilla River fish restoration program be provided by broodstock collected at Three Mile Dam on the Umatilla River and held/spawned at the satellite facilities.

In regards to Task 2, this project assists ODFW pathology personnel whenever they request help (FY 2000 BPA proposal; sections 4 and 8f). On some days, they may not have sufficient manpower to do the job and they may request assistance. In regards to Task 3, the same comments made previously apply here as well.

The UH&BAOP outlines and coordinates all production activities in the Umatilla basin including those conducted under this project. In addition, monthly management meetings (Umatilla Management, Monitoring and Evaluation Oversite Committee) also coordinate activities between projects. These forums help to ensure that duplication of effort and lack of coordination are minimized.

ISRP Comment/Question: The budget is not satisfactorily justified. The number of full time personnel seems high. No explanation is given for increased out-year costs. In fact, the proposal says it expects costs to reach a maximum of $661,000 in FY 1999, but shows $1,486,000 in FY 2000, increasing to $1,675,000 in FY 2004.

Response: This project provides for the operation and maintenance of five juvenile acclimation/release facilities and two adult holding/spawning facilities. While not all facilities are operated year round, there are fish activities (acclimation or adult holding/spawning) occurring year round at one or more of them. Maintenance at all facilities is a year-round task. Beginning in FY1999, two full-time personnel are being assigned to different projects during the period June through August, a period recognized to be slower than others.

The ISRP review stated that the FY2000 proposal indicated that project costs would increase from $661,000 in FY1999 to $1,486,000 in FY2000. In fact, the proposed FY2000 costs were $822,161 and the out-year costs would increase to $1,486,000 in FY 2001 (FY2000 BPA proposal, Section 5). The reason for the proposed increase to $822,161 in FY2000 was due to the assumption of costs for the rearing, marking, health monitoring, and administrative support for Umatilla production of spring chinook salmon at Little White Salmon and Carson National Fish Hatcheries by this project. Through FY1999, these costs have been covered under a different BPA funded project. The additional increase to $1,486,000 in FY2001 was due primarily to the anticipated completion of the Umatilla Supplement Hatchery and related O & M expenses. This facility would be operated and maintained under Project 8343500. Due to delayed planning process however, this facility will not be in operation in FY2001 and the proposed budget is anticipated to be similar to the proposed FY2000 budget. Costs for operating and maintaining all seven satellite facilities are based on previous operational years. The proposed increase from $1,486,000 to $1,675,000 reflects cost of living and inflation increases.

ISRP Comment/Question: It is not clear, given the high rate of straying of returning adults, that the acclimation facilities are accomplishing their presumed objective of encouraging return of adults to upstream areas.

Response: First, the use of juvenile acclimation/release facilities has been listed as one of the Artificial Production Review recommendations of the Scientific Review Team (SRT 1999). The recommendation is to acclimate/release juvenile salmon and steelhead in natural production areas.

Second, results from 20 acclimation evaluation studies conducted at Bonifer and Minthorn acclimation/release facilities from 1988 to 1992 suggest that acclimation may provide a benefit to returning adults to the area where they were released, thus reducing stray rates.

There has only been one stray from four individual summer steelhead studies and it was from a non-acclimated (control) group. In five of nine spring chinook studies, there were no strays from either the acclimated or control groups. In four studies that resulted in strays, the stray rate was higher for the control group than for the acclimated group in three of those studies. In two of three coho studies, the stray rate was higher for the control group than for the acclimated group. In four fall chinook studies, the stray rate was higher for the non-acclimated group than for the acclimated group in two of the studies and higher for the acclimated group in two studies. Overall, in nine out of 12 studies that resulted in some degree of straying, the stray rates for non-acclimated fish were higher.

ISRP Comment/Question: Is there any evidence that fish held in acclimation ponds are any more likely to return to the area as adults than fish released directly from the trucks?

Response: None of the acclimation evaluation studies conducted in the Umatilla Basin have attempted to determine whether acclimated fish are more likely to return to the release area as adults than fish released directly into the stream. The Umatilla Basin Natural Production Monitoring and Evaluation project has conducted extensive surveys in the Umatilla River basin. In recent years, dozens of spring chinook have been observed at the outlet of the Imeques acclimation facility and hundreds of adults have been observed holding/spawning near both the

Thornhollow and Imeques facilities where all spring chinook juveniles have been released since 1994 (Craig Contor, personal communication). In addition, since spring chinook releases in Meacham Creek were discontinued in 1992, very few spring chinook have been observed holding/spawning in Meacham Creek. Prior to this, Meacham Creek was a major holding/ spawning area for spring chinook.

Additionally, results from the same acclimation evaluation studies cited previously suggest that acclimation may help to increase smolt to adult survival. In all but one study, the total survival rates of the acclimated groups were similar to or higher than from the control groups. Similarly, in all but two studies, escapement to the Umatilla River was also similar to or higher for the acclimated groups.

**Project: 8343600 Umatilla Passage Facilities O & M**
Sponsor: Westland Irrigation District

CBFWA tier: 1
ISRP review: Delay funding until a thorough evaluation of success to date is completed. This project should be evaluated together with projects 8802200 and 8902700.

ISRP Comment/Question: This project should be evaluated together with projects 8802200 and 8902700.

Response: The proposers agree with the ISRP recommendation that these three projects be evaluated together. It was intended that they would be evaluated together, which is why they were grouped together in Section 3 of the proposal as umbrella/sub-proposal relationships.

The ISRP recommends that these proposals be evaluated as part of a higher programmatic level review. These three projects have already been evaluated five times as part of comprehensive program planning. These efforts included the Umatilla Fisheries Restoration Plan (Boyce 1986), Umatilla Subbasin Plan (CTUIR 1990), Umatilla Hatchery Master Plan (CTUIR/ODFW 1990), Wy-Kan-Ush-Mi Wa-Kish-Wit, Tribal Restoration Plan (CRITFC 1995), and in the subbasin plan updates provided in the CBFWA FY 2000 Annual Implementation Work Plan. All of these documents have prioritized the need to improve flows and physical passage conditions in the Umatilla Basin and recognized that long term operation and maintenance of these components is a key factor in the continued success of the Umatilla restoration program.

In addition to these planning documents, monthly programmatic management meetings (Umatilla Management and Monitoring and Evaluation Committee) and an annual project review are conducted and a Umatilla Basin and Hatchery Annual Operating Plan is developed. These in-basin forums provide coordination between the passage projects and other fish restoration activities and projects in the basin.

The proposers would recommend to the ISRP that all proposals be reviewed and evaluated by a group with more knowledge of the programs and projects in question. The recommendation by the ISRP to delay funding for these three critical projects reflects a lack of intimacy with the Umatilla program. Without these projects operating on a continuous basis, all the other anadromous fisheries projects in the Umatilla Subbasin are moot. These projects are essential for the continued success of the artificial production program and are required to maintain successful natural production in the basin as well. We would welcome tours to help evaluators become more familiar with projects in the subbasin setting. Based on the ISRP questions and comments it would appear that the reviewers did not fully read the proposals or missed important information contained in them. Specific responses to ISRP comments or questions for each of the individual proposals follow.

ISRP Comment/Question: This proposal like some others is “operational in nature rather than research oriented”. Therefore, “…specific data related to success of the project is limited.” Neither is specific information provided on the facilities operated and maintained.

Response: The project operates and maintains juvenile screens at Threemile Dam (RM 4), Maxwell Canal (RM 15), Westland Canal (RM 27), Feed Canal (RM 28), Stanfield Canal (RM 32) and adult ladders at Threemile Dam, Westland Canal, Feed Canal, and Stanfield Canal. In addition, the project maintains an adult trapping facility at Threemile Dam

and a juvenile trapping facility at Westland Canal. The design and construction, as well as the operating guidelines, for all these facilities was based on NMFS passage criteria.

ISRP Comment/Question: On the basis of the facts presented, it is not clear whether the fish passage facilities are located in stretches of river that are dewatered or in stretches of river that are bypassed by the truck and haul operation.

Response: Following irrigation development in the early 1900's, the Umatilla River was dewatered from Westland Dam to the mouth from late spring through fall and ran continuously the remainder of the year. Now, with implementation of the Umatilla Basin Project, the period of continuous flow in the Umatilla River has been expanded to the late summer through early summer period. However, where these facilities are located in relation to the seasonally dewatered stream reach is irrelevant since passage at these diversions is still required for both adults and juveniles when the stream is not dewatered. The adult and juvenile trapping facilities are sited on the downstream and upstream ends of the seasonally dewatered stream reach.

**Project: 8346700 Mitigation For The Construction And Operation Of Libby Dam**
Sponsor: Montana Department of Fish, Wildlife and Parks

CBFWA tier: 1
ISRP review: Fund in part at FY1999 level. Subsequent funding contingent on a favorable comprehensive review by a visiting independent scientific committee.

ISRP Comments/Question: Fund in part at FY1999 level. Subsequent funding contingent on a favorable comprehensive review by a visiting scientific committee.

Response: The ISRP comments were generally favorable and because of the "high productivity and focus on problems," connection to other Fish and Wildlife Program measures etc., the ISRP said that this is a good candidate for multi-year funding [authorization]. However, the proposal "could better explain what would be done specifically in FY2000." The proposal did explain specific tasks to be accomplished: an aggressive program in the Libby Mitigation Plan that will be implemented in the long-term; agreeing with the ISRP that a visiting committee should review the project on a three to five year periodicity and that the project managers "…should be invited to submit a multi-year (3 to 5 year) proposal"; and choosing to proceed with many projects simultaneously so that when some projects become delayed due to permitting, contracting, budgets, design changes, and other realities, other projects can be completed. The goal (and track record) is to create a constant stream of completed projects. The drawback to this approach is that it is difficult to predict a year or two in advance which projects will actually begin or be completed in a given year. Most on-the-ground projects require more than one year to complete. Conversely, if only a few projects are selected each year, some could be delayed, resulting in down time. Having the flexibility to roll to other projects when necessary for efficiency and expediency is a must. Also, having the flexibility to move rapidly on new opportunities as they arise is critical. The mitigation plan outlines how the many projects are prioritized and how new projects are selected as they present themselves. The need for this flexibility is another example of how multi-year authorization would benefit project productivity. Predicting what actions can begin and be completed in a three- to five-year project review period is easier.

ISRP Comments/Question: Funding would seem appropriate at the current level until the suggested comprehensive review can be conducted.

Response: This comprehensive review should be scheduled as soon as possible. The ISRP's detailed review and advice is welcome. This statement is very pertinent now since combining the Montana projects in the Kootenai, especially in light of the ISRP's recommendation to not fund one of the umbrella subproposals (project 9401001) that the ISRP recommended be combined last year. The project managers agree with the ISRP that the projects were very similar and should be combined, and this was done after obtaining permission from the CBFWA resident fish managers. This was why the umbrella proposal was created. The ISRP now recommends that the subproject not be funded because it is similar to the Libby Mitigation project (see our response to project 9401001). Review of the subproposals would demonstrate that the projects are indeed similar, but not duplicative. The site-specific projects

are complimentary and synergistic, completing the overall goals of the umbrella proposal. The combined budgets are needed to make this project whole.

ISRP Comments/Question: Are kokanee and rainbow (redband) native to the Kootenai?

Response: Kokanee are native to the Kootenay River and Kootenay Lake in Canada, and were introduced inadvertently to the upper Kootenai River (Libby Reservoir) through escapement from a Canadian hatchery. Kokanee then became wild in Libby Reservoir and was entrained through the dam and became established in the Kootenai River below Libby Dam. The Kootenai drainage is the only basin in Montana where interior redband rainbow is native. Genetic analyses indicate that the historic range of redband may have extended above Kootenai Falls (Huston 1995). Pure redband still exist in Wolf Creek, a tributary to the Fisher River (above the falls, below Libby Dam). Redband x non-native rainbow hybrids have also been found in Libby Creek (also above the falls and below Libby Dam). Stocking records do not indicate that redband were stocked above the falls. The most secure and abundant populations of redband are in a few tributaries to the Kootenai River below Kootenai Falls. Redband have been captured in the Kootenai River near Callahan Creek (near the city of Troy) and at the mouth of the Yaak River (and a few Yaak River tributaries) in Montana. Kootenay Lake in British Columbia also contains a relict stock of native rainbow (Jay Hammond, B.C. Ministry of Environment).

ISRP Comments/Question: Objective 4 is noteworthy. This is the model for restoration/conservation hatcheries.

Response: An innovative natural rearing concept in the Kootenai and Flathead basins has been employed, using restored natural habitat, genetic research and disease research to protect the behavioral traits and genetic integrity of the fish to be used in onsite recovery of wild runs.

ISRP Comments/Question: Are there native fishes that will be negatively affected by this project? Will fishes in Spring Creek negatively affect the redband trout?

Response: The natural rearing facility has an innovative outlet works to isolate the site from Libby Creek (the receiving water body). Libby Creek has pure westslope cutthroat and some WCT x rainbow and redband x rainbow hybrids. The project managers are very concerned about escapement to and/or reinvasion from Libby Creek and great care has been taken in designing the outlet works. There have been brook trout in Spring Creek and we plan to eradicate the remaining few using antimycin drip stations before bringing the redband eggs to the site. Antimycin can be used in Montana and is the preferred ichthyotoxin for use in flowing water with active springs. Unlike rotenone, antimycine is undetectable by fish and once the fish absorbs the toxin, they can not be revived by spring water. The literature shows that this toxin has the best track record for complete kills in flowing water with active springs. Montana laws strictly regulate all these actions and project staff are licensed applicators.

ISRP Comments/Question: Objective 6 : Active treatment is a valid restoration strategy; but why was the decision made to perform active restoration? Was there an analysis performed which assessed the trade-offs between active and passive restoration?

Response: Passive restoration techniques have been used where possible. Several sites have deteriorated due to excessive sedimentation from lateral stream migration and would not recover for hundreds of years (or more) without active restoration (e.g. Rosgen stream restoration). The time frame for restoration is critical because the streams are now flowing subsurface during the spawning season and, left alone, would destroy the remaining migrant population.

ISRP Comments/Question: In objective 6, chemical treatment of lakes and ponds is not 100% effective.

Response: This is true. The literature is full of case histories (and some earlier efforts) in which treatment was only partially successful and the target species ultimately rebounded, requiring additional treatments. In some cases, partial success is still cost-effective because the fisheries value offsets the cost of treatment. However, having learned that treatment with rotenone just prior to ice formation causes the toxin to remain effective longer, and when the high biological oxygen demand (BOD, in which oxygen is utilized by bacteria in decomposition of organic material) deoxygenates the water body under the ice, any remaining fish die. Having had several successful total eradication successes using this late fall treatment technique upon ice breakup, the toxin denatures rapidly,

invertebrates recolonize and can be replaced by a desirable fish assemblage (including small fish where loons are present).

ISRP Comments/Question: What is the design of before and after studies that will ensure sufficient statistical power to determine the efficacy of the rehabilitation efforts?

Response: Typically, studies are designed that treat waters containing non-native fish species (i.e. thousand of non-native yellow perch or pumpkinseed sunfish and/or northern pike). Follow up sampling is very simple. If the target species are removed and the desired species remains, presence and absence provides the measure for success. If treatment is only partially successful, sampling surveys will document that some target species remain and can be assessed on the effect of their rebound on numbers and growth rate in the desired species populations. High level statistics are not really required to show this. Results can be assessed through relative abundance and comparative growth statistics.

**Project: 8401400 Smolt Monitoring Program Marking**
Sponsor: U.S. Fish and Wildlife Service

CBFWA tier: 1
ISRP review: Fund for one year. Subsequent funding contingent on programmatic review. This project does not warrant a separate proposal but should be included in a comprehensive proposal. This entire set of smolt monitoring projects needs to receive a programmatic review with one of the goals to develop and justify a program-wide design that really is capable of delivering enough data, of high enough precision, to answer the management questions.

ISRP Comment/Question: This proposal does not provide sufficient information for evaluation. Rather, it refers the reader to the SMP Umbrella proposal. The proposal should clearly identify the relevant background, specific objectives, project design, and provisions for evaluation.

Response: This project was written and submitted by the Fish Passage Center (FPC) and is the true sponsor of the project. The work performed by the USFWS and individual state agencies for the smolt monitoring project were submitted as individual projects by the FPC with the corresponding agency listed as the sponsor. The FPC has indicated they will correct this error and be submitting any responses to CBFWA and NPPC directly. This particular piece of work is one of the projects referred to in Response 1 above as being “returned” to the appropriate project from the Annual Stock Assessment contract.

**Project: 8503800 Colville Tribal Fish Hatchery**
Sponsor: Colville Confederated Tribes

CBFWA tier: 1
ISRP review: Do not fund. Although the proposal is adequately presented, the objectives are in conflict with regional goals to enhance and protect native biota. The proposal would be more acceptable if native species, such as local stocks of redband or cutthroat, were used. This proposal needs to address and monitor potential impacts on native biota.

ISRP Comments/Question: Do not fund. Although the proposal is adequately presented, the objectives are in conflict with regional goals to enhance and protect native biota. The proposal would be more acceptable if native species, such as local stocks of redband or cutthroat, were used. This proposal needs to address and monitor potential impacts on native biota.

Response: The rationale for this recommendation appears to be the reviewers’ perception that the project is in conflict with regional goals, has not addressed and monitored potential impacts to native biota, and does not utilize local stocks of redband and cutthroat trout. In response to comments regarding conflict with regional goals, the tribe believes that the Council’s Fish and Wildlife Program is more than a native species recovery/enhancement program. The Northwest Power Act authorizes the Council to promptly develop and adopt a program to protect, **mitigate,** and enhance fish and wildlife populations affected by hydropower development. The Colville Tribal Hatchery provides

fish stocking activities that support and enhance tribal subsistence and non-tribal recreational sport fisheries within the Colville Reservation, including boundary waters. These activities partially mitigate for the lost anadromous fish resources related to the construction of the federal hydropower system, including the complete extirpation of anadromous fish above Chief Joseph and Grand Coulee dams, which addresses the mitigation portion of the Council's Fish and Wildlife Program (page 17 of proposal).

The hatchery program is consistent with portions of the Council's systemwide goal of "a healthy Columbia River Basin, one that supports both human settlement and long-term sustainability of native fish and wildlife species in native habitats where possible, while recognizing that where impacts have irrevocably changed the system we must protect and enhance the ecosystem that remains. To implement this goal, the program will deal with the Columbia River as a system; will protect, mitigate and enhance fish and wildlife while assuring adequate, efficient, economical and reliable power supply; and will be consistent with activities of fish and wildlife agencies and tribes" (1994 Fish and Wildlife Program, Section 2.1). While the hatchery program does not exclusively enhance native species, rainbow trout (a native salmonid) constitutes approximately 55% of the total hatchery production. Additionally the program addresses supporting human settlement (consumptive utilization of natural resources) and minimizing conflicts with power production and other uses of the Columbia River by providing a fishery off-site, but closely associated with the mainstem Columbia River. The hatchery program also addresses fisheries management in irrevocably altered habitats (i.e. management of exotic stocks and species in ecosystems that consists of severely altered and degraded habitats) and is consistent with the objectives of the Colville Tribe by providing subsistence fishing opportunities, all of which address components cited in the Council's Fish and Wildlife Program (Section 2.1).

The project addresses to some extent the systemwide polices addressing native and non-native species. Section 2.2A of the Councils 1994 Fish and Wildlife Program states, "The program preference is to support and rebuild native species in native habitats where feasible. This means that remaining fish and wildlife habitat should be protected and restored to promote native species, especially habitat that supports weak populations of fish and wildlife. The Council also recognizes that in certain instances such as the mainstem Columbia and Snake River corridors, fish and wildlife habitat has been altered so that some native species are ill adapted. In these instances, projects that enhance species adapted to the altered habitats may be appropriate and may in fact be the only available form of mitigation. However, any such action must follow a through evaluation of the consequences, if any, to existing native species or the practicality of restoration of native species." This project has not and will not indiscriminately utilize exotic species/stocks in locations where they do not already exist and where native species enhancement has been identified as feasible. Pages 17-19, of the proposal describe in detail, the historical background, and the rationale/justification of exotic species/stock management on the reservation. Pertinent information include; historical stocking of non-native species since the 1930's, absence of intact native salmonid species assemblages, highly altered and degraded habitats, and constraints to native species and habitat restoration. Review of the aforementioned available scientific information coupled with a total of 35 years personal experience managing the resident fishery resource on the Colville Reservation has formulated the opinion that this project is not a threat to existing native salmonids inhabiting reservation waters (pages 17-19 of proposal).

Potential ecological interactions involving other native biota, however, have not been investigated in a robust fashion, largely due to management priority of salmonids. Investigating ecological interactions became a priority in the Council's program most recently in the 1999 ISRP review and the current artificial production review process. The SRT report indicates that ecological interaction investigations are lacking in most production programs and should be addressed. The tribe accepts this criticism with some reservations, the long history of non-native species/stock management on the Colville Reservation complicates the investigation of ecological interactions. Potential impacts of hatchery activities on existing native biota, if any, may have occurred long ago, leaving in question the impacts of continued hatchery activities. The recent emphasis and suggestions that ecological interaction analysis may be a significant data gap and instrumental in directing hatcheries as a tool has prompted the Colville Tribe to initiate trophic cascade studies on several reservation lakes that receive stocking from this project. Funding for this activity has been provided outside the Council's program and was not included in the proposal, largely because it is limited to limnological / zooplankton data collection and analysis and has yet to fully incorporate fish interactions. The tribe intends to continue addressing ecological interactions in the 2001 funding period, if after discussion of the aforementioned information, the Council determines that it is a good utilization of limited funds. The tribe also believes that the lack of ecological interaction studies and analysis is pertinent to almost all "on the ground" projects in the basin including artificial production projects, habitat rehabilitation projects, native

species reintroduction projects and native/non-native species enhancement projects. To recommend non-funding of a particular project because it has not fully addressed a complicated issue such as ecological interactions seems to be extreme at this time, particularly when many other projects in the basin that were recommended for funding were deficient in the same area.

The ISRP report also indicated that the project would be more acceptable if it utilized local stocks of native species such as redband or cutthroat trout. The proposal explicitly discusses the lack of native salmonid species and associated constraints to the enhancement of these stocks (page 17-19 of proposal). There are no known local redband or cutthroat trout populations within the bounds of the reservation; however, if there were, the tribe would be negligent if it were to utilize these stocks prior to an in-depth investigation to the population status of the donor stock. Investigating native stock status and evaluating potential utilization for hatchery purposes, developing hatchery protocols and potential impacts to donor stocks are time-consuming tasks. Incorporating native stocks into the hatchery program should be discussed in the context of long-term hatchery refinement and not rational for immediate hatchery termination. Potentially, there may be some isolated populations of indigenous salmonid stocks in some headwater areas that have not been surveyed. The tribe will propose (upon Council direction) investigations for the FY2001 hatchery proposal to gather more complete data regarding native salmonid presence/distribution and status and their potential utilization for native species recovery and tribal subsistence/recreational fishery potential.

ISRP Comments/Question: The proposal is fair, in the mid-range of those reviewed, but the absence of any linkage to FWP is conspicuous.

Response: The absence of linkage to the FWP statement is only applicable to page 1 of the proposal where the NPPC Measure Number was inadvertently omitted. The proposal specifically cites program measure 10.8B.6 as the project program measure (page 20). Numerous and detailed explanations of the project's relationship to the Council's Fish and Wildlife Program exist within the project proposal. The abstract section of the proposal (page 17) states that "the hatchery project was adopted into the Council's fish and wildlife program in 1984 as resident fish substitution for anadromous fish losses." The identification of the project as a substitution project links the project to one of the two distinct resident fish program categories cited in Section 10.1 and section 10.8B of the Council's program. The Rationale and Significance to Regional Programs section (pages19-20) specifically states that the project's efforts are in the blocked area above Chief Joseph and Grand Coulee Dams, which is consistent and linked to the Council's priority to substitution measures (section 10.1B). Additionally, the proposal addresses other high priority criteria identified in section 10.1B, making it abundantly clear that the project activities support important fisheries, and that reasonable precautions have been and continue to be taken to not adversely affect habitat for native resident fish. The proposal also addresses approved biological objectives and approved loss assessments that occur in areas which previously had salmon and steelhead, but which are now permanently blocked by federally licensed or regulated hydropower facilities (pages 17-23 of proposal). The proposal specifically cites and addresses the aforementioned fish and wildlife program priorities and sections on page 20 of the proposal.

The project proposal quality was classified as "fair in the mid-range of those reviewed." While this may seem to be an insignificant issue compared to other criticisms regarding this project, it is disconcerting for personnel that take pride in quality work. The FY1999 review classified this project proposal as "well written and clearly argued." The FY2000 proposal was essentially an updated FY1999 proposal. In addition the Resident Fish Managers (RFM), which consists of 13 tribes, four state agencies, and two federal government agencies, made a point to compliment the proponent for the quality of the proposal. The proposal was considered "well written with lots of detail." Review of projects in the ISRP 2000 report find other projects that were also considered to be mid-range of those reviewed, but were defined as "well written and comprehensive." It appears there are some inconsistencies in defining "fair in the mid-range of those reviewed."

ISRP Comments/Question: The proposal does not address what attempts are being made to determine why performance objectives, in terms of catch per unit effort and condition, are not generally met.

Response: The reviewers are partially correct in their interpretation of information provided. While the proposal did not discuss in detail the investigative attempts to assess why particular objectives were not met consistently, it did articulate potential factors affecting stated objectives for catch rates and fish condition factors. In addition, the annual reports provided by this project discuss in greater detail the complexities of reservation fisheries, potential factors influencing catch rates and fish condition factors, and initial steps to investigating potential causative factors.

Although the proposal did not address this in detail, activities are currently underway to evaluate the appropriateness of the existing fishery performance objectives and creel census survey analysis. An example of these activities includes seasonal analysis of creel census, rainbow trout stock performance evaluation, and review of CPUE and fish condition factors observed in similar fisheries across the Pacific Northwest. Information similar to the above information could have been provided in the proposal; however, proposal length limitations prevented this from occurring. It appears that the appropriate approach may have been to provide everything regarding the project to prevent inadvertently omitting what might be important information.

To the tribe's knowledge, this is one of the few, if not the only, production facility within the Council's program that has incorporated fishery related performance objectives into the program evaluation. Development of performance objectives occurred in 1994-95, prior to the ISRP or any other independent peer review group. The tribe realized the value of analyses other than pounds of production or numbers of fish. Initial objectives regarding catch rates and fish condition factors were selected from historical creel data (e.g. maximum observed values on record). Admittedly, these values may have been overly optimistic in regards to meeting both catch rates and fish condition factors simultaneously; however, the tribe believed that it was better to strive to meet ambitious objectives than to knowingly under achieve to meet meaningless objectives.

ISRP Comments/Question: It should also describe what attempts are being made to determine the factors limiting natural production another project objective.

Response: The reviewers are correct in their criticism regarding the lack of discussion in the proposal regarding natural production. The hatchery program identifies 13 different objectives, two of which include increase of brook and rainbow trout natural production by 15% by the year 2010 (objectives 7 and 8). Time constraints and priorities have prevented any meaningful work toward these two objectives as evidenced by FY-2000 proportional costs of 0% for both objectives (Page13 of the Proposal). It is hoped that the current process-oriented focus of the Council's existing Fish and Wildlife Program will diminish over time, providing additional opportunities to address program/project objectives. Objective 9, designed to determine contribution to the catch of hatchery and natural production components, is the only objective contribution to the assessment of natural production. Developing a marking program to identify all hatchery origin fish is the primary task of objective 9. A 100% external mark would allow an assessment of hatchery/wild harvest component giving insight to existing natural production and whether mixed-stock harvest interactions exist. Past hatchery marking efforts and hatchery fish indicators (abraded fins) indicate hatchery fish constitute the majority of the harvest in all lakes monitored; however, a good marking program would result in more reliable data collection and analysis. Page 26 of the proposal discusses briefly the proposed marking program and BPA's opposition to funding.

ISRP Comments/Question: It appears that the approach to attaining these objectives is simply to stock fish, but this is a hit-or-miss approach and is not likely to be successful.

Response: The tribe believes that this is somewhat of a simplistic conclusion of the information provided in the proposal and the program activities. It is recognized that a large proportion of the activities and objectives involve and rely upon stocking activities; however, monitoring of fishery related objectives provides insights to production modifications, and this management direction is consistent with constraint to natural production, existing fish assemblages, and the tribe's desire to support subsistence and recreational fisheries. The tribe desires improvement in natural production and has adopted performance measures and begun initial fishery/ecological interaction studies to determine potential limiting factors to fish production and harvest in lakes stocked by this program (See Truscott, K.T. 1997. Colville Tribal Fish Hatchery Production Report. and Truscott, K.T. 1998. Draft Colville Tribal Fish Hatchery Production Report).

While the reviewers criticize the approach, saying it is a "hit-or-miss approach and is not likely to be successful," they also acknowledge that the program has a "history of success, based on standard views of need." There appear to be some inconsistencies within this review regarding "success." The tribe believes this program has been successful in providing fish to support a subsistence and recreational fishery for the past 10 years as a Council program measure and for the past 60 years as a stocking program implemented by tribal, state, and federal agencies.

ISRP Comments/Question: The proposal overall could improve by demonstrating the projects linkages to others in the area.

Response: The Colville Tribe is the sole operating authority for the hatchery and sole management authority for the fisheries resource within the boundaries of the Colville Reservation. The program is not critically dependent upon any other area projects, nor does it involve cooperative funding (the mitigation is 100% BPA responsibility). Additional definition and discussion of "linkages" by the reviewers may facilitate better understanding of the question by the proponent.

ISRP Comments/Question: The proposal explains the justification for using non-native species, but the questions persist to whether that is consistent with the goals of the FWP. The stocking does not seem compatible with regional goals of fostering local species and stocks.

Response: This is a repeat of the question of consistency with the Council's Fish and Wildlife Program. See responses to ISRP recommendations above. The repeat of this issue in the ISRP comments rein-forces the tribal perception that the reviewer's objection to the program is more philosophical/policy oriented than technical or scientific in nature.

The proposal indicates that the program currently utilizes free-ranging broodstocks of brook and lahontan cutthroat trout. Allowing natural selection to determine the stock composition of the broodstock fosters local species and stocks. The localized species and stocks in this case happen to be non-native species. It appears that reviewers limit the usefulness of local stock development to only native species.

ISRP Comments/Question: Reviewers challenge the claim that this stocking program is good for native species (see page 17 of proposal).

Response: While the reviewers cite page 17 of the proposal for claiming the proposal is good for native fish, the proponent could find no evidence of that accusation on page 17 or anywhere else in the document. The proposal advocates that the program promotes mitigative fishery opportunities for lost anadromous fisheries above Chief Joseph and Grand Coulee Dams using fish species consistent with historical management (post hydro- development) and available habitat with minimal if any negative impacts to native salmonid populations. While the project doesn't directly benefit native fish, adverse impacts to native resident salmonids are unlikely for reasons discussed on pages 17-19 of the proposal. To characterize this project as "good for native species" is a mischaracterization of the project.

ISRP Comments/Question: Monitoring and evaluation seem to include stocked non-native fish instead of including effects of stocking of all fish and the ecosystem. The proposal should address and monitor potential impacts on native biota.

Response: The reviewers are correct in their assessment that the current monitoring plan targets hatchery stocks and is the focal point of the monitoring (i.e., how well do the hatchery stocks contribute to the fisheries). This type of monitoring provides information that allows analysis to determine whether operational, regulatory, or biological changes may be necessary to maximize the effectiveness of the fishery program (including hatchery production) to support the existing subsistence and recreational fishery. The current monitoring and evaluation program records all fish species encountered during the fisheries surveys and can be expanded to include greater analysis of native species. However, to monitor native species in detail, additional monitoring methodologies, personnel, and equipment will be necessary. For example, Twin Lakes (a water body stocked by this program) has a species assemblage currently composed of exotic species/stocks (brook trout, largemouth bass, rainbow trout) and native species (bridge-lip sucker and longnose sucker). Current monitoring activities in Twin Lakes involve creel census and gill netting (bottom-set and suspended horizontal), all of which target salmonids. In efforts to assess status, population trend, and potential ecological interactions of all species present, additional monitoring such as food habitat preference/utilization analysis, habitat preference/utilization analysis, and predation indices would be required at selected seasonal periods (spring, summer, fall and winter). The increased sampling would require additional capture methods such as beach seining, purse seining, trawling, electrofishing, etc. It is questionable whether the scientific community would approve a study plan that utilizes limited Council funding to investigate impacts to indigenous sucker populations. Especially when the lake has other non-native fish species that are not supported by the hatchery program (i.e. largemouth bass) which may be affecting the native fish component.

**Project: 8605000 White Sturgeon Mitigation And Restoration In The Columbia And Snake Rivers**
Sponsor: Oregon Department of Fish and Wildlife

CBFWA tier: 1
ISRP review: Fund. Review in two years. At that time the proposers should have participated in writing an umbrella proposal for all the white sturgeon projects in the basin. Project leaders should develop a long-term strategy and should present a plan to show how they are cumulatively moving towards objectives. Project leaders should invite an independent scientific review and produce a peer-reviewed synthesis on the state of the science on Columbia River white sturgeon.

ISRP Comment/Question: Fund. Review in two years. At that time the proposers should have participated in writing an umbrella proposal for all the white sturgeon projects in the basin. Project leaders should develop a long-term strategy and should present a plan to show how they are cumulatively moving towards objectives. Project leaders should invite an independent scientific review and produce a peer-reviewed synthesis on the state of the science on Columbia River white sturgeon.

Response: It appears the ISRP is recommending review in September 2001. The project is currently working under a 5-year work plan (October 1997 - September 2002). Project sponsors would like to add this peer-reviewed synthesis as a major component of the final report for the 5-year period and the FY2002 work plan. The effect is to push back the "review" by one year, but this timing will allow the sponsors to incorporate findings from the multi-year approach.

ISRP Comment/Question: They have been diligent in publishing their results in peer-review scientific literature. However, the cost is high and the ISRP's 1998 recommendation for an independent review of white sturgeon in the Basin has not occurred.

Response: The budget has decreased approximately 4% from FY1999. The budget will continue to decrease in future years as research tasks are completed, and the project focuses on mitigation activities and monitoring those activities. This project includes all work currently underway to mitigate and restore white sturgeon populations downstream from Lake Roosevelt in the Columbia River, and downstream from Lower Granite Dam in the Snake River; however, funding comprises less than 2% of the total BPA budget for resident and anadromous fish projects. Funding for all sturgeon projects comprises only about 5% of the resident and anadromous fish budget.
In 1998 ISRP recommended "a programmatic review of the sturgeon work, including this project." Project accomplishments and its current 5-year work plan were reviewed by the Northwest Power Planning Council in April 1997. Propagation and transplant tasks were specifically reviewed by NPPC staff in January 1998. Project sponsors ask for definition of an independent programmatic review and the surrounding process.

**Project: 8709900 Dworshak Dam Impacts Assessment and Fisheries Investigation**
Sponsor: Idaho Department of Fish and Game

CBFWA tier: 1
ISRP review: Fund

ISRP Comment/Question: One concern is why over ten years were required (with funding apparently of several million dollars) to get to the point of on-site testing.

Response: The Dworshak Project has only been working on entrainment losses since 1994. Form 1994 to 1996, work focused on using the selector gates on the dam to minimize entrainment losses with some success. Strobe light testing began in 1997. This project has not been performing entrainment work for 10 years.

ISRP Comment/Question: One other concern is that the publication plan is inadequate, publication of results of the tests (both off- and on-site) in a peer-reviewed journal should be a funding requirement.

Response: The project leader will be presenting the results of this project at the 25th International Kokanee Workshop, the Western Division Meeting of the American Fisheries Society, and the National Meeting of the American Fisheries Society. In addition, strobe light findings will be submitted to a peer-reviewed journal this year and included in the annual report to BPA. This should be an adequate way to disseminate the project results. This should have been explained better in the proposal.

**Project: 8710001 Enhance Umatilla River Basin Anadromous Fish Habitat**
Sponsor: Confederated Tribes of the Umatilla Indian Reservation

CBFWA tier: 1
ISRP review: Fund in part at a reduced level. Review next year for reports of results and application of monitoring.

ISRP Comment/Question: The proposal provides a substantial list of data to be collected, but there is no mention of analysis or interpretation of the data. Who will be responsible for analysis? It is not clear from the list of monitoring activities that the needed knowledge will be obtained. What information is needed?

Response: The project utilizes a quantitative stream habitat survey methodology developed by the Oregon Department of Fish & Wildlife (ODFW) Aquatic Inventory Project. Habitat surveys were previously conducted, analyzed, and interpreted (1993 - 1997) by the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) Umatilla Basin Natural Production Monitoring and Evaluation Project (UBNPME - BPA Project No. 9000501) in the majority of proposed project areas. This data, included in UBNPME Project Annual Progress Reports, has assisted the project in identifying habitat deficient areas in the basin and largely guided the project's implementation efforts. The project continues to conduct habitat surveys and coordinates with the UBNPME Project in analysis and interpretation of data in proposed project areas where surveys were not previously conducted or physical characteristics have changed significantly. Habitat survey data, collected by CTUIR, has been provided to ODFW and included in a state-wide data base. CTUIR utilizes bench marks developed by ODFW to assist in determining habitat conditions. CTUIR Geographic Information System (GIS) Staff continue to develop subwatershed specific data bases and data layers to assist in guiding implementation activities.

The project coordinates with the UBNPME Project to obtain fish population and abundance data in proposed project areas. Much data has previously been collected from subwatersheds where proposed project sites are located and has been included in UBNPME Project Annual Progress Reports. Biological inventories are repeated at site specific project locations in coordination with the UBNPME Project, prior to and following implementation. Biological inventory data is collected in conjunction with habitat survey data. The UBNPME Project analyzes and interprets biological inventory data.

Photo point data is collected by project personnel prior to implementation and bi-annually thereafter. Photo points provide a visual record of physical site conditions at a specific time. Photographs indicate an upward, downward, or static trend in woody vegetation, stream bank stability and cover (Meyers, 1987). However, initial vegetation "expression," obvious in photographs, should not be confused with vegetation "succession" required for stream ecosystem health (Elmore and Beschta, 1987). Project personnel analyze and interpret photos.

Cross-sectional profiles are measured, prior to implementation and repeated at three to five year intervals thereafter, to determine changes in channel morphology and vegetative response. Project personnel measure cross-sections and analyze and interpret transect data.

Aquatic Macroinavertebrate data collection methods and analysis indices are indicated on page 17, (11), in the FY2000 Proposal. Data is included in the project's annual progress reports.

Stream temperature data is graphed by project personnel to demonstrate maximum, minimum and average daily temperatures and illustrate diurnal flux. These graphs and discussions regarding stream temperatures are provided in annual progress reports. Project personnel deploy and maintain three Isco Model 2700 Wastewater Samplers year-round. Data is processed at the Umatilla National Forest Water Lab.

Project personnel graph summarized data as suspended solids and include this information in annual progress reports.

The knowledge needed to identify habitat limiting factors and to quantify short and long-term effects of habitat enhancement activities will be obtained through the above listed pre and post-project monitoring (Objective 2 of the proposal).

Washington State University has been subcontracted by CTUIR to develop a watershed assessment of the Umatilla River Basin. This document will further assist the project in identifying data gaps and prioritizing project implementation during fiscal year 2000.

ISRP Comment/Question: This is not a stand-alone proposal. It can only be evaluated in the context of the Umatilla Subbasin program. For example, the reviewers were not able to discern the value of macroinvertebrate sampling.

Aquatic macroinvertebrate communities can reveal the quality of habitat components essential to aquatic fauna, such as water quality, substrate composition, riparian habitat quality, ecosystem stability, and past history (U.S. Bureau of Land Management, 1988). Aquatic macroinvertebrate communities are useful for monitoring biological integrity of streams since they function as integrators of pollution over time and are a direct measure of beneficial uses (aquatic life support) (Meyers, 1987). According to Schoen (1991), macroinvertebrates cover the whole range of pollution sensitivity, from highly sensitive stoneflies and mayflies down to very tolerant aquatic worms, so the presence or absence of particular taxonomic groups provides a good yardstick of pollution. Unlike fish, macroinvertebrates are relatively immobile. So, if macroinvertebrates are absent from their normal habitat, it is likely that pollution drove them out. In a healthy stream, one should find a balanced population consisting of many different kinds of organisms. Adverse chemical or physical changes that disrupt any part of the stream ecosystem often decrease community diversity.

Data about macroinvertebrates is site specific. Aquatic ecosystems cannot be managed on the basis of average values over large diverse areas (U.S. Bureau of Land Management, 1988). However, site-specific aquatic macroinvertebrate data will assist in assessment and improvement of aquatic habitat and water quality within a given stream reach. Information obtained from aquatic macroinvertebrate surveys should prove useful in showing the effects of physical and water chemistry influences (i.e. habitat improvements) within project areas over time.

Macroinvertebrate populations are only one of several parameters monitored under the project. Current macroinvertebrate sampling efforts utilize approximately $2,500 per year in personnel expenses and lab fees (less than 1% of the total proposed budget).

References:

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Meyers, L.H. 1987. Montana BLM Riparian Inventory and Monitoring, Riparian Technical Bulletin No. 1., BLM-MT-PT-88-001-4410, Billings, MT.

Schoen, J. 1991. "Canaries of the Stream", The Volunteer Monitor. Vol. 3, No. 1, page 1.

U.S. Bureau of Land Management - Phoenix Training Center. 1988. Aquatic Macroinvertebrate Sampling. Course Number 6000-ST-5 (A Self Study Guide). 26 p.

**Project: 8712702 Comparative Survival Rate Study (Css) Of Hatchery Pit Tagged Chinook**
Sponsor: Pacific States Marine Fisheries Commission

CBFWA tier: 1
ISRP review: Fund for one year. Subsequent funding contingent on programmatic review. This entire set of smolt monitoring projects needs to receive a programmatic review with one of the goals to develop and justify a program-

wide design that really is capable of delivering enough data, of high enough precision, to answer the management questions.

ISRP Comment/Question: Subsequent funding contingent on programmatic review. This entire set of smolt monitoring projects needs to receive a programmatic review with one of the goals to develop and justify a program-wide design that really is capable of delivering enough data, of high enough precision, to answer the management questions.

Response: The CSS study design, including all aspects of the design were reviewed and approved by the ISAB in 1997 and 1998. Extensive review and revision of the study design occurred. The Study was designed and discussed for an extended time frame with the ISAB. Although additional review is always possible, it should be considered in context of the comprehensive review by the ISAB in 1997 and 1998. Adult recovery locations and technology are addressed, they are researched and implemented through other projects both funded as part of the NPPC/BPA program and the Corps of Engineers Program. The CSS study is conducted within the framework of the progress and implementation of these other projects. However, specific implementation of adult recovery at dams has not been within the purview of the CSS. The CSS effort, however, successfully implemented a volitional release detection system for juveniles at Rapid River hatchery and adult PIT tag detection at hatchery racks. The ISAB asked for more detail regarding the analysis of the scales, but at this stage we are only collecting scales and cataloging them for future analysis by ODFW using the methodology cited in the Work Plan. Whether or not useful information is generated is unknown at this time, but it would be remiss for us not to collect the scales from adults while we are handling the fish at the Lower Granite Dam adult trap.

Other comments by the ISRP will be addressed in the data analysis, which will be completed in 1999, covering the first three years of this study. At this time sufficient tags and returns are available for analysis to document that this study is “capable of delivering enough data, of high enough precision, to answer management questions”.

ISRP Comment/Question: They need to explicitly address adult recovery localities and methods. Specifically, they need to examine nearby spawning localities outside the hatcheries for the presence of tagged fish.

Response: The ISRP comment is vague in that they did not specify how we should examine nearby spawning localities. This issue has been discussed and addressed by the CSS Oversight Committee. The only practicable way to do this would be to radio-tag all CSS adults when handled at Lower Granite Dam and monitor their movement. The CSS oversight team considered a request by Ted Bjornn to include CSS in his radio-tagging studies last year, but the committee rejected it due to concerns regarding the impacts of radio-tags on the survivability of the fish to the hatchery. This is because hatchery-to-hatchery SAR estimates are an important objective of the CSS. This activity could jeopardize this objective of the study.

**Project: 8712703 Imnaha River Smolt Monitoring Program Project**
Sponsor: Nez Perce Tribal Fisheries/Watershed Program

CBFWA tier: 1
ISRP review: Fund. The ISRP found this proposal to be suitable for a multi-year review cycle. However, the proposal referred to an opportunity to transform the current trapping facilities into more permanent ones; this idea was not developed and should not be implemented without a direct proposal including adequate explanation and justification.

ISRP Comment/Question: The ISRP found this proposal to be suitable for a multi-year review cycle. However, the proposal referred to an opportunity to transform the current trapping facilities into more permanent ones; this idea was not developed and should not be implemented without a direct proposal including adequate explanation and justification.

Response: We agree that this proposal should be approved for multi-year funding. Modification of the current trapping facilities to accommodate consistent operation in all stream conditions will be necessary to conduct the comprehensive juvenile emigration studies being developed under the Northeast Oregon Hatchery Program.

Feasibility studies for such modifications are currently being developed under other funding sources. If any future funding for facility modifications is request under this project a full description of needs will be prepared.

ISRP Comment/Question: This proposal is for needed and valuable quantitative research on the natural history of hatchery-produced and wild salmonid smolts, focusing on steelhead. This is a well-constructed proposal to investigate a question of high potential benefit. It is coordinated well with other projects and provides a good scientific/technical background, although there needs to be more information on how data are used to operate dams.

Response: A description of how information from this project is used to operate dams is included in Proposal 8712700 (Smolt Monitoring by Non-Federal Agencies) as it relates to the Fish Passage Center. We will stress the linkages to Project 8712700 in future proposals.

ISRP Comment/Question: Methods and investigators appear to be competent. This project will provide valuable information concerning timing of spring emigration, estimated survival, smolt performance, and health of wild and hatchery salmonid smolts from the Imnaha River to Snake and Columbia River Dams. The project has been ongoing for five years, and all tasks have been completed and summarized in published (or recent draft) reports. future submissions should report summary and highlight information that has been gained from the work so that its productivity, reliability and success can be better judged. It is important for reviewers to understand the quantitative results obtained, how variable they are, and how they have been interpreted and used. Sampling protocols are tied directly to specific objectives and substantial effort is expended to reduce stress on all fish, especially wild chinook salmon.

Response: We will attempt to more fully summarize past results and how they have been applied in management. However, the format and limited space of the proposal application have challenged our ability to comprehensively describe the project results.

ISRP Comment/Question: The ISRP noted that the work appears to be of general interest and value. Data from this project should be especially valuable because it can be used to evaluate the effectiveness of the hatchery program for supplementing wild runs of anadromous salmonids. Additionally, the program provides timely information for assessment of in-season water budgets, evaluation of spill requests, and monitoring of fish health. The ISRP encourages the investigators to more publication of results in
open, peer-reviewed literature.

Response: We agree that some aspects of this research have provided information that should be submitted for peer-reviewed publication. This is on our “to-do-list.”

ISRP Comment/Question: Reviewers provided some specific questions and comments, as follows: Objective 1 - how variable is the timing of smolt migration between years?

Response: The timing of smolt migration varies for chinook salmon and steelhead smolts. Additionally, variation in migration timing differs between natural and hatchery fish. Emigration timing has been reported in the 1994-1997 annual reports in sections titled “Emigration Timing and Trends,” (Ashe et. al. 1995, Blenden et. al. 1996, Blenden et. al. 1997, and Blenden et. al. 1998). Yearly variation for natural chinook has ranged from mid-March to mid-May. Yearly variation for natural steelhead has ranged from late April to mid-May. Yearly variation for hatchery chinook and steelhead has been dependant on the release dates, release strategy (direct vs. volitional), release site, and number of release groups.

ISRP Comment/Question: Is it necessary to monitor it each year in order to adjust water budgets and accommodate spill requests?

Response: The Imnaha Smolt Monitoring Program provides tributary specific information about the migration past Lower Granite Dam that can not be determined from daily passage indices. Monitoring emigration each year provides the Fish Passage Center with a comparison of migration timing and smolt performance from the Clearwater, Salmon, Grande Ronde, Imnaha, or mainstem Snake River at Lower Granite Dam.

Monitoring at the site also provides information on unintentional releases of hatchery fish (e.g., ice at the head box forces personnel to pull the dam boards). Additionally, it is a useful tool during volitional releases. Without monitoring, travel times of volitionally released hatchery fish from the Imnaha River trap site, 7km from the mouth, to Lower Granite Dam would not be possible. There are no interrogation facilities at the acclimation site.

ISRP Comment/Question: Do smolts arrive en masse at dams, or are they spread out over a long reach of the river and take longer to pass? This must have implications on the effectiveness of water management.

Response: Patterns of arrival at the dams vary between species and rearing types. Specific information such as the median and 90% arrival times for 1993-1997 can be found in Blenden et al. 1997.

ISRP Comment/Question: What is the range of variability in the other parameters that have been measured all these years (Objectives 1-3)? E.g., in 4 years survival of natural steelhead smolts ranged between 71% to 93%. Are there any statistically or biologically significant differences between any of the estimates?

Response: Natural steelhead smolt survival estimates to Lower Granite Dam for 1994 to 1997 have ranged from 73.1 to 93.1% with 95% confidence intervals of 5.3 to 28.0% respectively. However, both the low and high end of the range of survival occurred in 1994 from an early release of 418 fish and a later release of 334 fish. A more in-depth analysis will be made of the releases and survival estimates and included in future reports.

Cumulative PIT tag detections are one example of why a more in-depth, and cautious, analysis of survival from 1994 to 1997 is needed. Cumulative PIT tag interrogations at main interrogations sites (Lower Granite, Little Goose, Lower Monumental, and McNary dams) have ranged from 48.3 (n = 604) to 76.2% (n = 227) for 1993-1997. The highest interrogation percent occurred in 1995 and no survival estimate is available to Lower Granite Dam. The lowest estimate occurred in 1994 for which there were four survival estimates reported. The next highest interrogation was 75.2 % (n = 782). It occurred in 1997 and survival to Lower Granite Dam was estimated at 90.2% with a 95% confidence interval of 3.9%.

**Project: 8740100 Assessment Of Smolt Condition: Biological And Environmental Interactions**
Sponsor: U.S. Geological Survey, Biological Resources Division, Columbia River Research Laboratory

CBFWA tier: 1
ISRP review: Delay funding until they provide a more precise statistical analysis protocol that is supported by the sampling design and data. The entire set of smolt monitoring projects needs to receive a programmatic review with one of the goals to develop and justify a program-wide design that really is capable of delivering enough data, of high enough precision, to answer the management questions.

ISRP Comment/Question Delay funding until they provide a more precise statistical analysis protocol that is supported by the sampling design and data.

Response: The purpose of the proposed work is to determine to what degree there are correlations between physiological indicators currently applied in the basin for smolt management, and environmental factors during rearing, e.g., hatchery practices, and the juvenile emigration, and to describe their interactions at different life stages.

Statistical analysis of the project database will be provided by Dr. John Skalski (BPA project 8910700) and incorporates critical documented measurements from the Assessment of Smolt Condition project, CRIS, DART, and stock specific fish passage data from the FPC website. A proposal was prepared and agreed to on April 22, 1999 for activities related to the mid-Columbia River. The proposal contains references to statistical analyses that will be used in FY2000 to evaluate the Snake River juvenile salmonid emigration, and the lower Columbia will follow to complete the basinwide analysis. The preproposal outlines statistical analyses to be applied to the database including principal components/factor analysis, correspondence analysis, multiple regression and canonical analysis. River conditions from several documented sources will be used in the analysis to determine locations that provide measurements that are appropriate to the analysis. Rather than compete with other available databases, the project gathers information from the regional databases, each quite specific in nature, to incorporate with the project

physiological and stock specific database. Because the majority of environmental variables are collected at juvenile fish collection facilities, measurements can be matched to specific smolt condition sampling dates.

The initial analysis is exploratory in nature, but will help determine the appropriateness of the environmental variables to juvenile salmonid management, and their effects on smolt condition. For example, CRIS was accessed to determine movement of different fish stocks within the basin, and the FPC database was accessed to determine stock release dates and coded wire tag codes. Smolt-to-adult survival is determined from marking programs established in the basin, and from returns to subbasins and hatcheries.

The statistical framework developed during this activity will help establish those factors that need to be considered in programmatic approaches to monitoring and evaluation, data collection, management, and analysis.

Data reduction techniques will be necessary to summarize the co-variate data into distinct number of meaningful explanatory variables. Even then, the number of co-variates may outstrip available degrees of freedom. Therefore, this exercise is exploratory in nature, hoping to identify possible correlative relationships and co-variates that may govern outmigration success.

Possible data reduction techniques include the use of principal components/factor analysis by summarizing and reducing the dimensionality of the co-variates. En factor analysis, linear functions of the co-variates that explain large amounts of the variability in the independent data are identified. In correspondence analysis, non-metric data and nonlinear relationships can be used in dimensional reduction. These techniques will be explored to summarize the multiplicity of independent observations.

Multiple regression and canonical correlation analysis, in turn, will be used to explore relationships between travel times and survival during outmigration with the reduced co-variate observations. Canonical correlation will be used to explore relationships between linear functions of outmigration dynamics with linear functions of smolt condition indices and ambient in-river conditions.

A key factor in all analyses is the relatively few years of outmigration performance. The eight years of data from three hatcheries represents at best 24 independent observations. Furthermore, years 1987-1992 and 1993-1994 are confounded by techniques used to estimate travel times and survival (i.e., brand marks versus PIT-tags).

The statistical package S+ for the UNIX operating system will be used to perform the data reduction and correlation/regression analyses.

**Project: 8740700 Dworshak Impacts/M&E And Biological/Integrated Rule Curves**
Sponsor: Nez Perce Tribe

CBFWA tier: 1
ISRP review: Delay funding until project team incorporates expertise in modern water management modeling and evaluation.

ISRP Comments/Question: Delay funding until project team incorporates expertise in modern water management modeling and evaluation.

Response: The project sponsor, Nez Perce Tribe, concurs that this work is needed, and that simulation modeling is the preferred approach to understand implications of alternative dam and reservoir operation strategies. The project sponsor fully intends to draw on the technical expertise of operating agencies during the integration-modeling phase of this project. This is consistent with the approach taken by Montana Department of Fish and Wildlife and Parks (MDFWP), the developer of the integrated rule curve prototype methodology. Because integration will incorporate expertise from water managers such as the US Army Corps of Engineers (COE) and the Bonneville Power Administration (BPA), and contracted modelers, incorporating a staff hydrologist modeler is unnecessary. The project managers are currently working with the Washington Water Research Center in Pullman, Washington, to apply the MDFWP modeling methodology to the Dworshak specific data and to convert the model components from Fortran to a more current PC-based modeling format. Data collection for model development has been ongoing for

6.5 years (beginning in 1993), not for over 10 years, as stated by the ISRP. The earlier years of Project 8740700 were directed towards updating angler use and harvest data, as well as information on fish abundance, growth, and food habits. A final summary report for this phase of the project was published in 1993. This project was initiated to collect sufficient data to develop a hydrologic/biological model. This modeling is, in turn, to be used to evaluate various operational scenarios towards development of an integrated operational rule curve. Therefore, the primary thrust is management oriented, not research oriented. For this project, publication in peer review journals, as opposed to reports published by the funding agency, is not necessarily a legitimate measure of project accomplishments. The project managers recognize the "tough sell" of the integrated rule curve approach, but are committed to successfully applying this approach to achieve balanced use of valuable water resources. As an example of this commitment, the Project Leader presented an overview of the integrated rule curve approach to the Dworshak Operation Plan Committee on June 16, 1999. This committee, established by the Idaho Water Resources Council, was very interested and supportive, and desired input into the process. The project managers recommend that FY2000 funding not be delayed, so that the sponsor can carry on with biological modeling and rule curve integration.

ISRP Comments/Question: Background in hydrology and water resources operations is conspicuously absent. Perhaps it is for this reason that almost no details are given as to how alternative operating rules will be evaluated.

Response: The Project Leader is a Certified Fisheries Scientist with course work and career development training in hydrology. In addition, the Project Leader has been directly involved with major regional water resource management efforts, notably the System Operation Review conducted by the COE, BPA, and the US Bureau of Reclamation (USBR). The Project Leader is also currently involved with region-wide water resources management fora, including the Columbia Basin Fish and Wildlife Authority Fish Passage Advisory Committee and the Multi-species Framework process. Because the operations of Dworshak Dam and Reservoir have regional implications, it is this type of regional water management background that is particularly germane to this project. The project includes provisions to contract appropriate modeling expertise where appropriate to complete specific tasks.

Alternative operational rules or conditions will be evaluated based on how dam discharges and pool elevations affect the Dworshak ecosystem and other operational parameters, such as flood control and power production. Specific biological relationships are under development that will allow evaluation of various alternative operations regarding reservoir primary and secondary productivity. A previously completed IFIM study of the Clearwater River below Dworshak Dam will allow evaluation of the impact of various alternatives on downstream anadromous and resident fish habitat (weighted useable area). Clearly the Corps' "upper" flood control rule curve will be used as a benchmark, if not a hard constraint, regarding flood control needs. Further, integrated rule curve operational parameters, if described in established 14-time step increments (per year), can be input into the HYSSR or HODRSIM models to evaluate impacts on flood control and power production. Ideally, a PC-based version of these regional models can be linked to the integrated rule curve model to effect real-time analysis that would not command the use of modeling staff from the operating agencies.

ISRP Comments/Question: What retrospective period of analysis will be used?

Response: The reservoir-specific biological rule curve will be based on those relationships established during the data collection period. Data collection has been ongoing since 1993. As has been the case for the MDFWP integrated rule curve exercise, refinements to these relationships are anticipated, as additional information becomes available. Operational data, including pool elevations, power generation inflow, outflow, spill for Dworshak Dam and Reservoir are available from 1972.

ISRP Comments/Question: How will the modeling activities be coordinated with operations studies being conducted by other agencies, such as COE and BPA?

Response: Please note that the need to develop BRC's and IRC's for Dworshak Dam and Reservoir was an outgrowth of the System Operation Review (1990-1995) conducted by the COE, BPA and USBR. We intend to continue our coordination with these entities and others, as appropriate, during the integrated rule curve development phase.

ISRP Comments/Question: The panel was concerned that this work will result in a set of rules the feasibility of which will not be adequately demonstrated in the context of the larger system within which Dworshak must operate.

Response: The Project Leader, having had extensive experience in various regional water management fora, is well aware of the formidable challenges and issues, both local and regional, associated with the operation of Dworshak Dam and Reservoir. This underscores the need for integrated rule curve development.

ISRP Comments/Question: This project has been ongoing for over 10 years, with cumulative funding now in excess of $1M; it concerns reviewers that a set of operating rules is still not developed.

Response: Data collection for model development has been ongoing for 6.5 years (beginning in 1993) not for over 10 years as stated by the ISRP. The earlier years of Project 8740700 were directed toward updating angler use and harvest data, as well as information on fish abundance, growth and food habits. A final summary report for this phase of the project was published in 1993. MDFWP had approximately 8 years of data collected prior to rule curve formulation, and their model has been modified and updated based on additional data collections and analyses. The plan is to present preliminary operational recommendations to NPPC in FY 2000.

ISRP Comments/Question: The reviewers would have expected, after 10 years of funding to have seen several papers in journals that deal specifically with reservoir issues, such as the ASCE Journal of Water Resources Planning and management, or the journal of the American Water Resources Association.

Response: See previous response. Also, the primary thrust is management oriented, not research oriented. For this project, publication in peer review journals, as opposed to reports published by the funding agency, is not necessarily a legitimate measure of project accomplishments. The Project Leader also invested considerable time in participating in the Tri-agency System Operation Review (1990-1995). The product of this effort was a preliminary model for Dworshak Reservoir, used in the Resident Fish Appendix K, to evaluate various regional water management alternatives. The Project Leader is listed as an SOR Resident Fish Technical Work Group member and technical appendix contributor in the 1994 Draft Columbia River SOR EIS and the 1995 Final Columbia River SOR EIS. This exemplifies the management thrust of the project; however, the Project Leader recognizes the value of publishing in peer review journals, if content justifies it, and if time permits.

ISRP Comments/Question: Before the project proceeds, all participants need to be convinced that the project is important to them so there is a positive, constructive view of its development. This is unlikely to occur unless and until technical expertise in interactive water management modeling and evaluation, including the human dimensions thereof, is added to the project team.

Response: We recognize the “tough sell” of the integrated rule curve approach, but are committed to successfully applying this approach to achieve balanced use of our valuable water resources. As an example of this commitment, the Project Leader presented an overview of the integrated rule curve approach to the Dworshak Operation Plan Committee on June 16, 1999. This committee, established by the Idaho Water Resources Council, was very interested and supportive, and desired input into the process. The COE’s Dworshak Project Manager was included as an observer at this meeting.

The Project Leader has been directly involved with major regional water resource management efforts, notably the System Operation Review conducted by the COE, BPA, and the USBR. The Project Leader is also currently involved with region-wide water resources management fora, including the Columbia Basin Fish and Wildlife Authority Fish Passage Advisory Committee and the Multi-species Framework process. Because the operations of Dworshak Dam and Reservoir have regional implications, it is this type of diverse regional water management background that is particularly germane to this project. The project includes provisions to contract appropriate modeling expertise where appropriate to complete specific tasks.

Recommending that FY 2000 funding not be delayed, so that the sponsor can carry on with biological modeling and rule curve integration.

**Project: 8802200 Umatilla River Fish Passage Operations**
Sponsor: Confederated Tribes of the Umatilla Indian Reservation

CBFWA tier: 1
ISRP review: Delay funding until a thorough evaluation of success to date is completed. This project should be evaluated together with projects 8343600 and 8902700.

ISRP Comment/Question: This project should be evaluated together with projects 8343600 and 8902700.

Response: The proposers agree with the ISRP recommendation that these three projects be evaluated together. It was intended that these three projects would be evaluated together and is why they were grouped together in Section 3 of the proposal as Umbrella/sub-proposal relationships.

ISRP Comment/Question: The project's objective is to increase survival in a trap and haul operation. Yet, the proposal states that the project is not responsible for evaluating survival rates. It is true that another project exists to measure survival rates (8902401), but this points again to our programmatic comment that there is a need for evaluation at a higher level than individual projects—at the umbrella level.

Response: These three projects have already been evaluated five times as part of comprehensive program planning. These efforts included the Umatilla Fisheries Restoration Plan (Boyce 1986), Umatilla Subbasin Plan (CTUIR 1990), Umatilla Hatchery Master Plan (CTUIR/ODFW 1990), Wy-Kan-Ush-Mi Wa-Kish-Wit, Tribal Restoration Plan (CRITFC 1995), and in the subbasin plan updates provided in the CBFWA FY 2000 Annual Implementation Work Plan. All of these documents have prioritized the need to improve flows and physical passage conditions in the Umatilla Basin and recognized that long term operation and maintenance of these components is a key factor in the continued success of the Umatilla restoration program.

In addition to these planning documents, monthly programmatic management meetings (Umatilla Management and Monitoring and Evaluation Committee) and an annual project review are conducted and a Umatilla Basin and Hatchery Annual Operating Plan is developed. These in-basin forums provide coordination between the passage projects and other fish restoration activities and projects in the basin.

The proposers would recommend to the ISRP that all proposals be reviewed and evaluated by a group with more knowledge of the programs and projects in question. The recommendation by the ISRP to delay funding for these three critical projects reflects a lack of intimacy with the Umatilla program. Without these projects operating on a continuous basis, all the other anadromous fisheries projects in the Umatilla Subbasin are moot. These projects are essential for the continued success of the artificial production program and are required to maintain successful natural production in the basin as well. We would welcome tours to help evaluators become more familiar with projects in the subbasin setting. Based on the ISRP questions and comments it would appear that the reviewers did not fully read the proposals or missed important information contained in them. Specific responses to ISRP comments or questions for each of the individual proposals follow.

ISRP Comment/Question: The proposal says that from 3,800 to 6,300 adults have been trapped at Three Mile Dam each year over the last 12 years. Of these, 400 to 3,800 have been hauled upstream and 135 to 1,100 have been hauled for brood stock to the hatchery (proposal p. 10). The reviewer naturally wonders what became of the rest of the fish. There are at a minimum 1,400 fish unaccounted for.

Response: Section 8.a., Technical and/or scientific background, states that the project traps and hauls during inadequate flow periods and operates physical passage facilities to optimize migration conditions during adequate flow periods and Section 8.f., Methods, Task 1 specifically notes that a key component of the project is to maximize time periods and optimize conditions for natural migration. In other words, the remaining fish swim.

ISRP Comment/Question: The success of this project is evaluated on the basis of whether passage facilities meet established engineering requirements. This is certainly not an adequate measure for biological effectiveness.

Response: The proposers disagree with this ISRP assessment. National Marine Fisheries Service and the Fish Screening Oversight Committee have developed these passage criteria and engineering requirements utilizing information gained

from a multitude of monitoring and evaluation efforts and represent the most biologically effective means of operating these facilities. For example, screen submergence levels are based on moving debris over the screens while maintaining proper velocities so as not to impinge juveniles on the screens.

In addition, passage monitoring and evaluation projects in the basin have evaluated the effectiveness of the passage facilities and their operating criteria. In most cases their results concluded that the facilities were effective in meeting passage needs and recommendations to change operating criteria or facilities have been incorporated into daily operations. Operating the passage facilities within the current criteria has already been determined to be the most biologically effective manner of operation.

**Project: 8805301 Northeast Oregon Hatchery Master Plan**
Sponsor: Nez Perce Tribe

CBFWA tier: 1
ISRP review: Do not fund. This proposal is not scientifically sound and does not offer justification for the belief that building another hatchery in the Columbia Basin would contribute significantly to the restoration of spring chinook salmon.

ISRP Comment/Question: This proposal is not scientifically sound and does not offer justification for the belief that building another hatchery in the Columbia Basin would contribute to the restoration of spring chinook salmon.

Response: The reviewers do not provide any specific comments that support the conclusive statement that this proposal is not scientifically sound. The following information responds to the justification and basis for this project.

The proposal is faithful to the NPPC's Columbia Basin Fish and Wildlife Program (NPPC 1994) Measure that authorized this project. As explained in Section 8.b (page 15) FWP Measure 7.4L.1 directed the "…planning, design, construction, operation, maintenance, and evaluation of artificial production facilities…in the Imnaha and Grande Ronde rivers... ." As explained in Section 8.d (page 17) the NPPC authorized this project with the intent of doubling adult salmon returns to the mouth of the Columbia. However, given the imminent danger of extirpation faced by chinook salmon in these subbasins (Section 8.a) the managers have refocused planning efforts to: 1) forestall extirpation and 2) realistically rebuild the runs. Because actions undertaken at Lookingglass Hatchery to implement conservation programs have overloaded that facility, the managers have concentrated on alleviating the stress on fish at the hatchery by developing alternatives to meet program needs. This is consistent with Artificial Production Review recommendations of the Scientific Review Team (SRT 1999).

This proposal explained in detail (pages 11-13) that the chinook salmon populations in Northeast Oregon (NEO) are facing a desperate situation. In the last five years the managers have witnessed the lowest adult escapements on record for Imnaha and Grande Ronde subbasin spring chinook. Furthermore, recruits produced per adult spawner have been below replacement for the last 10 consecutive years (Carmichael et al. 1998a, Carmichael et al. 1998b, ODFW 1996, ODFW 1998a, ODFW 1998b, BIA 1998). In an analysis of the Imnaha spring chinook population conducted by Mundy and Witty (1998), a 62% decline in the population was predicted every generation (5 years). The analysis concluded that the naturally spawning Imnaha River spring chinook population IS NOT VIABLE (Mundy and Witty 1998). Declines in chinook escapement in the Minam and Wenaha rivers (tributaries to the Grande Ronde managed as wild fish streams) have equaled or exceeded those observed in many of the other streams in the basin, which is especially discouraging since these watersheds are classified as wilderness areas with pristine habitat. Modeling work done by the ODFW estimates extinction of the populations between 2025 and 2050 (Carmichael, ODFW, personal communication). As stated by Oregon Department of Fish and Wildlife (ODFW 1998b), "we are presently in an emergency situation where dramatic and unprecedented efforts will be needed to prevent extinction and preserve any future options for use of natural fish for artificial propagation programs for recovery and mitigation."

Supplementation programs can forestall extirpation by stabilizing and preserving genetic resources through increased adult escapement. As described in Section 8.a (page 11) Carmichael et al. (1998a) describes progeny-to-parent ratios as being one of the most important performance measures and comparisons used to assess the effectiveness of the Imnaha supplementation program for spring chinook. Progeny-to-parent ratios for the natural

population have been well below 1.0 (replacement) since the 1983 broodyear (11 years). In contrast, the progeny-to-parent ratios for the hatchery produced fish have been above 1.0 for all the brood years except 1990 -1992. The average progeny-to-parent ratio for the hatchery population is near 4.0, while the average for the natural population is less than 0.5 (Carmichael et al. 1998a). That means that for every fish that spawns "in the wild," less than one-half of a fish will return to spawn the next generation. Using the natural progeny-to-parent ratios, Carmichael et al. (1998a) conducted a simulation to estimate total escapement and natural escapement as if the hatchery program had never been operated. Their findings were that far more fish return to the Imnaha River basin with the hatchery program than would have without the hatchery. Additionally, they found there were substantially more natural spawners with the hatchery than there would have been without the hatchery.

The supplementation programs for which facilities are proposed have received extensive scientific scrutiny through the NMFS ESA Section 10 permit application process, an independent scientific review through the NPPC Three-Step Process, and an Independent Scientific Panel assembled through the U.S. v. Oregon dispute resolution process. As explained in Section 8.a (page 12), the existing supplementation programs, including monitoring and evaluation components, for Imnaha and Grande Ronde River spring chinook are described in ESA Section 10 permit applications and authorized by Permit 847, 973,1011, 1164 and Modification 1011. In granting their permits NMFS determined that the direct take of listed fish for hatchery broodstock will be beneficial to the threatened species.

The Grande Ronde supplementation program underwent independent scientific review through the NPPC Three-Step Process in May of 1998 prior to the NPPC authorizing the program. The review was facilitated by the Pacific Northwest National Laboratory (PNNL) with the purpose of determining if BPA, ODFW, NPT, and CTUIR staff adequately addressed the technical questions of the NPPC Fish and Wildlife Committee. The reviewers found that project sponsors:

> "…responded to the technical questions of the Three-Step Process more than adequately. The various activities associated with the Grande Ronde Basin Endemic Spring Chinook Supplementation Projects appear to be well thought out and sufficiently coordinated. The provided documentation and the Project staff responses clearly demonstrate that the proposed program has been subjected to considerable technical and policy reviews."

Furthermore, the supplementation program in the Grande Ronde subbasin was based on recommendations of an Independent Scientific Panel (Currens et al. 1996). Co-managers believe continuing these programs is important for preventing extirpation of the spring chinook populations in these subbasins and providing the genetic resources for rebuilding the populations once the major limiting factor (smolt-to-adult survival) is corrected.

In refocusing this program the managers identified problems in the ability of existing hatchery facilities to accommodate the fish culture requirements for operating a conservation program. Production of fish for the Currently Permitted Program (CPP) occurs at Lookingglass Hatchery. As described in Section 8.a (page 13), Lookingglass Hatchery was originally designed and constructed as a mitigation facility for two stocks of fish, however, production of the CPP has resulted in a program for eight groups of fish. Through this project, an independent review of Lookingglass Hatchery was recently completed which evaluated the ability of the facility to meet program requirements and identified necessary modifications. In summary, the review documented that it is impossible to meet CPP needs at Lookingglass Hatchery (Montgomery Watson 1999).

One of the more critical constraints was water availability. Pathogen-free water for incubation and early rearing is a limiting factor. Currently there is not enough chilled pathogen free water or space at Lookingglass to incubate even half of the CPP. The existing incubation and early rearing well water supply has been unreliable as evidenced by a failure this past winter. The water supply from Lookingglass Creek is also insufficient for program needs from July through early November when the average stream flow typically falls below the water right of the hatchery. This results in rationing within the facility as well as impacts to resident fish in Lookingglass Creek (including ESA-listed bull trout) because during this period all flow is typically diverted to the hatchery. Additionally, the existing wells are not recharging and potential for development of supplemental groundwater and/or surface water sources is not promising (Montgomery Watson 1999).

There is no rearing space available for expansion of Lookingglass Hatchery. Co-managers are currently developing rearing protocols for ESA-listed fish. Recently, under the Nez Perce Tribal Hatchery project an interagency panel of experts in fish production and evolving NATURES rearing strategies, known as the NATURES Design Team,

recommended a 0.10 density index for final rearing of spring chinook. Low density rearing recommended by ODFW pathologists was defined as a density index of 0.04 (Groberg et al. 1999). In order to meet low density criteria it would be necessary to construct 21 to 49 additional raceways (there are currently 18 raceways) at Lookingglass Hatchery. Montgomery Watson (1999) estimates there is room for six; however, they note this space is also allocated to the ozone treatment system. Other additional rearing units necessary to meet the CPP include 109 incubator stacks and 63 troughs.

As part of the Lookingglass Hatchery review an analysis of fish health was also conducted. Statistical analysis of fish health data presented by Groberg et al. (1999) strongly supports the belief that the prevalence of *Renibacterium salmoninarum* (pathogen causing bacterial kidney disease) infection has been increasing at the hatchery over the past several years. The pathologists conducting the review concluded that: "Considering the anticipated loading of the hatchery facility with the presently permitted components of the ESA-listed chinook salmon stocks, it is likely that the prevalence and severity of infectious diseases and resultant losses among these stocks will increase markedly in the future if the facility continues to operate under the present water supply and fish rearing capacity scenario." Pathology recommendations included: 1) Develop a pathogen free water supply sufficient for rearing sensitive and listed stocks (ozone treatment), 2) Maximize low density rearing for juveniles, and 3) Physically and functionally structure the hatchery to prevent contamination among separate programs and stocks, which will require extensive engineering and redesign of the facility (Groberg et al. 1999).

Montgomery Watson (1999) also provided cost estimates for alternatives to providing facilities that meet the needs of the CPP. Retrofitting Lookingglass Hatchery to accommodate water quality and quantity in addition providing space would be very expensive, if even possible. Cost estimates for simply retrofitting Lookingglass Hatchery with an ozone treatment facility are between $10 and $12 M. This estimate does not include any additional rearing space, developing a supplemental water supply, or the power upgrade necessary to operate the facility. In contrast, the combined cost of two new incubation and rearing facilities in the natal watersheds of the fish being cultured (Imnaha and Lostine rivers) was estimated at $12.1 M. These estimates included ozone treatment and rearing space to accommodate a density index of 0.10 (Montgomery Watson 1999).

ISRP Comment/Question: Although this program is funded under the guise of spring chinook restoration, planning and development for coho and sockeye salmon reintroduction and steelhead supplementation are listed as specific objectives of the project.

Response: As stated in Section 8.b (page 15), this project is authorized by the NPPC's FWP (NPPC 1994) Measure 7.4L1 which directs the BPA to: "…fund planning, design, construction, operation, maintenance, and evaluation of artificial production facilities to raise chinook salmon and steelhead for enhancement…in the Grande Ronde and Imnaha rivers... ." Additionally, Section 7.4L of the FWP states that, "The Council…maintains that the facility need not necessarily be limited to spring chinook, as originally proposed, if other stocks would benefit from hatchery supplementation." Coho and sockeye have been components of NEOH master planning since inception of the project. The objectives submitted in the project proposal are consistent with the NPPC's FWP measure and the project has been funded to meet that measure.

The managers have been concentrating on spring chinook planning as the priority species because they are still present in the subbasins and because they are at such high risk of extirpation. However, co-managers have identified coho as an important component of NEOH and have worked to plan a coho restoration program that is compatible with the Grande Ronde ecosystem. Although the Grande Ronde River was historically the largest producer of coho in the Snake River Basin (Section 8.a, page 14) coho were not included in the Lower Snake River Compensation Plan and the decline and eventual extirpation of this species from the Snake River has never been mitigated. As part of the comprehensive planning process occurring through this project to address the program measure, the managers completed a report to BPA in 1998 which evaluated the feasibility of reintroducing coho to the Grande Ronde River (Cramer and Witty 1998). Cramer and Witty (1998) concluded the prospects for successful introduction are good; however, passage mortality and harvest rates under current conditions are too high for natural production to be self-sustaining without supplementation (Cramer and Witty 1998).

Sockeye is another species appropriate for supplementation in the Grande Ronde subbasin (FWP Section 7.4L). Work under this component of NEOH is consistent with the NPPC's FWP Section 7.5 which lists Specific Actions to Assist Weak Stocks, specifically Snake River sockeye salmon. Activities under this action were to: "…consider

reintroduction in all historical production areas such as Wallowa and Warm lakes." As part of the planning process the managers completed and submitted a feasibility report on reintroducing sockeye in Wallowa Lake to BPA in 1998.

With the 1998 listing of steelhead under the ESA it is critical that existing production programs be modified. The LSRCP steelhead program in the Grande Ronde subbasin supports a popular sports fishery but the broodstock utilized is NOT native. NMFS has recently directed that the existing brood be phased out and that production to support the mitigation program should come from native broodstock. Facilities to collect fish to initiate a native broodstock do not exist and neither do acclimation and incubation and rearing facilities that are consistent with recommendations of the Scientific Review Team on artificial production (SRT 1999). In order to implement this management directive comprehensive planning must be accomplished.

ISRP Comment/Question: Population declines of chinook salmon are attributed to decreased production resulting from juvenile and adult mortality that occurs at Snake and Columbia mainstem dams and reservoirs; it is unclear how hatchery supplementation will overcome these factors. Without freshwater habitat and marine survival information, it will be difficult to accurately assess the role of supplementation in annual variation in the number of returning salmon. For these reasons, the reviewers judge the proposal to be of questionable benefit to fish.

Response: It is common and documented knowledge among biologists that work in the Snake River Basin that the major factor limiting production of Snake River salmon stocks is smolt-to-adult survival (USFWS 1998). The supplementation programs associated with the proposed facilities will not overcome this problem, as the proposal acknowledges (Section 8.a). However, these programs can forestall extirpation by significantly increasing the number of adults returning to their natal watershed and contributing to natural spawning aggregates (Carmichael et al. 1998a). A recent symposium on the status of hatcheries operated under the Lower Snake River Compensation Plan (USFWS 1998) found that where comparisons were made between wild and hatchery populations, the progeny-to-parent ratios for hatchery fish are, on the average, several times greater than wild fish. This is not to imply that smolt-to-adult survival rates are better for hatchery fish, or that hatchery fish do not succumb to a high post-release mortality, or that the beneficial progeny-to-parent ratio results in large numbers of returning salmon. It does imply that hatcheries can offer a mechanism to avert extinction. Several members of the ISRP were present at the LSRCP symposium as panel members and should be aware of these conclusions.

The Imnaha and Grande Ronde spring chinook supplementation programs have comprehensive monitoring and evaluation components that track performance of both hatchery and natural production. Although it would be preferable to have increased information on "freshwater habitat and marine survival" to more accurately evaluate variation in annual returns, the information is not necessary to take action to forestall extinction. The managers know that wild chinook associated with this project have been below replacement since at least the 1983 broodyear and that they are at high risk of demographic extinction. The managers also know that supplementation can result in higher progeny-to-parent ratios than occur in the naturally spawning populations and thus provide a buffer to demographic risk. Supplementation is a superior alternative to letting "nature take its course" when the natural environment is no longer able to maintain an effective population size and the stock faces demographic jeopardy.

ISRP Comment/Question: Overall, this proposal fails to adequately justify its expense. This project is more planning and coordination than construction, though it involves some collection of baseline data.

Response: As indicated by the title, this is indeed a planning project. In response to the ISRP recommendations on approval of "new production initiatives," the NPPC developed and adopted the Three-Step Review Process in 1997. The NPPC process dictates that construction would not begin until review of the project occurred at each of these steps and was approved. Steps in this process are: Step 1 – Conceptual planning, represented under the Program primarily by master plan development and approval; Step 2 – Preliminary design and cost estimation, as well as environmental (NEPA and ESA review); and Step 3 – Final design review prior to construction and operation. This proposal is in Step 1 of the NPPC's Three-Step Process, which involves conceptual planning, master plan development, independent scientific review, and approval. Items that need to be addressed in a master plan submitted to the NPPC are listed in Section 7.4B of the NPPC's FWP (NPPC 1994) and include 1) project goals; 2) measurable and time-limited objectives; 3) factors limiting production of the target species; 4) expected project benefits (e.g., gene conservation, preservation of biological diversity; fishery enhancement, and/or new information); 5) alternatives for resolving the resource problem; 6) rationale for the proposed project; 7) how the

proposed production project will maintain or sustain increases in production; 8) the historical and current status of anadromous and resident fish in the subbasin; 9) the current (and planned) management of anadromous and resident fish in the subbasin; 10) consistency of proposed project with Council policies, National Marine Fisheries Service recovery plans, other fishery management plans, watershed plans and activities; 11) potential impact of other recovery activities on project outcome; 12) production objectives, methods and strategies; 13) brood stock selection and acquisition strategies; 14) rationale for the number and life-history stage of the fish to be stocked, particularly as they relate to the carrying capacity of the target stream and potential impact on other species; 15) production profiles and release strategies; 16) production policies and procedures; 17) production management structure and process; 18) related harvest plans; 19) constraints and uncertainties, including genetic and ecological risk assessments and cumulative impacts; 20) monitoring and evaluation plans, including a genetics monitoring program; 21) conceptual design of the proposed production and monitoring facilities, including an assessment of the availability and utility of existing facilities; and 22) cost estimates for various components, such as fish culture, facility design and construction, monitoring and evaluation, and operation and maintenance. These items will be addressed in the completed master plans.

ISRP Comment/Question: The objective is to plan and build hatcheries, but a more appropriate scientific objective would be to evaluate the roles of various hatchery approaches, or of hatcheries and alternative approaches, or of the relationships of hatcheries and complementary approaches. No such development of rationale is given; there is no justification of projects or construction.

Response: The proposal submitted is consistent and faithful to the NPPC's FWP (NPPC 1994) measure that authorized this project. The supplementation programs for which additional facilities are proposed will be evaluating various hatchery approaches (e.g., captive broodstock, conventional broodstock, and NATURES rearing techniques). The rationale and justification for the facilities being proposed under this project will be described in the master plan under sections that address: 1) Alternatives for Resolving the Resource Problem and 2) Rationale for Proposed Project.

ISRP Comment/Question: The single greatest cost is for designing the facilities. This cost is not justified at all, except that it is a contract to Montgomery and Watson. In view of the existing knowledge of such approaches as NATURES and of the construction of other facilities, this expenditure needs to be defended.

Response: Preliminary design occurs under Step 2 and final design occurs under Step 3 of the NPPC Three-Step process for review of artificial production initiatives. Based on the timeline established for this project, final design will occur for two incubation and rearing facilities in FY2000. When this project is approved for final design BPA will solicit bids for the final design of the proposed facilities. At this point in the process, the managers do not know who the successful firm will be. The estimate for final design costs included in the proposal was provided by Montgomery Watson, a firm that prepared the conceptual design documents for the proposed facilities. Their estimate is consistent with a standard of 8 to 12% of total construction (Jay Marcotte, BPA, personal communication). The cost of design was included in the proposal because it is a cost of the project, however, the contract for the design work will be administered by BPA, not the Nez Perce Tribe. Costs to the NPT to participate in design of facilities are covered under personnel.

ISRP Comment/Question: The next greatest cost is for NEPA analysis. The proposers say that BPA is the lead on NEPA compliance, so reviewers ask why this project needs to perform NEPA analysis?

Response: NEPA analysis is required under Step 2 of the NPPC 3-Step process for review of artificial production initiatives. Based on the timeline established for this project NEPA analysis will occur for two incubation and rearing facilities in FY 2000. The cost of NEPA analysis was provided by BPA (Nancy Weintraub, BPA, pers. comm.). This amount was included in the proposal because it is a cost of the project, however, the contract for the NEPA work will be administered by BPA, not the Nez Perce Tribe. Costs to the NPT to participate in the NEPA analysis are covered under personnel.

ISRP Comment/Question: The third greatest cost is personnel; the large staff is not justified by the proposal.

Response: Personnel supporting this project are: Project Leader (0.9 FTE), Assistant Project Leader (0.25 FTE), Technical Writer/Biologist (1 FTE), Fisheries Technician (1 FTE), Director of Production (0.15 FTE), Production Coordinator (0.25 FTE), Research Director and Coordinator (0.25 FTE) and Administrative Support (0.25 FTE).

Developing plans for artificial production that are comprehensive and provide a thorough analysis of the items required to be addressed in a master plan under NPPC's FWP Section 7.4B (see Response #4) requires a tremendous amount of effort and manpower. Under this project planning and analysis are being conducted for three species of fish (spring chinook, fall chinook, and steelhead) in the Imnaha subbasin, and five species of fish (spring chinook, fall chinook, steelhead, coho and sockeye) in the Grande Ronde subbasin. These programs will be integrated with existing production efforts in the Grande Ronde and Imnaha subbasins. Efforts to improve artificial production facilities are consistent with recommendations of the Scientific Review Team (SRT 1999) convened by the NPPC. This effort is being conducted in coordination with the co-managers in the region, which include the National Marine Fisheries Service, U.S. Fish and Wildlife Service, Confederated Tribes of the Umatilla Indian Reservation, Oregon Department of Fish and Wildlife, and Washington Department of Fish and Wildlife.

ISRP Comment/Question: Reviewers provided some more specific comments and questions about the project: Why might it be a good idea to increase the number of facilities for producing salmon in the region?

Response: As explained previously, in order to continue to implement supplementation programs for preservation and restoration of Imnaha and Grande Ronde spring chinook populations it will be necessary to modify existing facilities AND construct new facilities. Facilities that meet programmatic needs are integral to the success of the following BPA funded (and ISRP approved) projects: 9801001 (ODFW Captive Brood), 9801007 (NPT Captive Brood), 9800702 (NPT O&M/M&E), 9800703 (CTUIR O&M/M&E), 9800704 (ODFW O&M/M&E). It is a general consensus among biologists who work in the Snake River region that hatcheries are necessary to provide conservation of Snake River chinook populations until factors limiting smolt-to-adult survival are corrected (USFWS 1998).

ISRP Comment/Question: What are the alternatives to increased facility construction and operation?

Response: Alternatives to development of proposed facilities will be addressed in the master plan document (see Response #5). The alternative to developing new facilities is the reduction or elimination of supplementation programs already initiated for Imnaha and Grande Ronde chinook salmon. The managers believe a reduction or elimination of these programs will hasten the impending extirpation of Northeast Oregon chinook populations.

ISRP Comment/Question: What are the financial and ecological costs to the various approaches?

Response: The master plan will contain estimates for alternatives to constructing new facilities. Also contained in the master plan and the NEPA document will be an analysis of the ecological effects due to the proposed action.

ISRP Comment/Question: Even if the Lookingglass hatchery were larger, might there still be a reason to spread the effort over more sites to reduce the possibility of catastrophic loss at a single site from disease or other failure?

Response: Yes. The approach to developing a conservation hatchery is to "spread-the-risk" by culturing an ESA listed population in more than one facility to prevent catastrophic loss due to facility failure. The co-managers agree that "splitting high priority production between two facilities is a good way to diversify risk faced by the CPP." (ODFW memo, June 17,1999.)

ISRP Comment/Question: Are separate incubation and rearing facilities needed for spring chinook and coho because they are in different rivers?"

Response: In the Grande Ronde subbasin spring chinook and coho could be cultured at the same facility. Facilities will be designed and constructed with the possibility of expansion taken into consideration. The managers are currently not planning to supplement coho in the Imnaha River subbasin. Although it is the desire of the managers to incorporate all species planned for supplementation in Northeast Oregon into one master plan the extreme situation facing spring chinook requires immediate action be taken. The NPPC Three-Step Review Process is already lengthy

and inconsistent with emergency actions and unfortunately incorporating all the species into one plan would only exaggerate the process.

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**Project: 8805302 Plan, Site, Design And Construct Neoh Hatchery - Umatilla/Walla Walla Component**
Sponsor: Confederated Tribes of the Umatilla Indian Reservation

CBFWA tier: 1
ISRP review: Do not fund. The proposal is not scientifically sound. The project needs to be included in an Independent Programmatic Review of the Umatilla and Walla Walla hatchery programs.

**The current working title for this project has changed since it was first proposed. The new project title is: "Design And Construct Umatilla Hatchery Supplement."**

ISRP Comment/Question: The proposal is not scientifically sound.

Response: The reviewer offers no specific comments that support this claim. The project is consistent with the Council's Fish and Wildlife Program (7.4 L1) and has been supported repeatedly by numerous planning efforts (see below).

The project compliments numerous ongoing projects (passage improvements, flow enhancement, stream habitat enhancement, etc.) that are being implemented to restore salmon and steelhead populations in the Umatilla Basin. In order to restore extirpated spring chinook, the hatchery tool must be used in concert with the above mentioned efforts to put the fish back where they once existed. CTUIR considers it scientifically sound to re-establish an extirpated population by embarking upon a comprehensive program, which addresses all factors that lead to the demise of the species. The Artificial Production Review recommendations of the Scientific Review Team (SRT 1999) will be used to implement actions such as low density rearing and acclimation of smolts in natural production areas.

Restoration of spring chinook in the Umatilla Basin has been the most successful of any species in terms of adult returns, fisheries provided, and natural production of returning adults. CTUIR proposes to build upon this success and expand production to meet original Umatilla spring chinook smolt goals as outlined in the Umatilla Hatchery Master Plan (1990). The Umatilla program to date has been viewed as a model for successful reintroduction and restoration of spring chinook salmon in the Columbia Basin.

ISRP Comment/Question: The project needs to be included in an Independent Programmatic Review of the Umatilla and Walla Walla hatchery programs.

Response: This project has already been evaluated five times as part of comprehensive program planning. These efforts included the Umatilla Fisheries Restoration Plan (Boyce 1986), Subbasin Plan (CTUIR 1990), Wy-Kan-Ush-Mi Wa-Kish-Wit, Tribal Restoration Plan (CRITFC 1995), Umatilla Hatchery Master Plan (CTUIR/ODFW 1990), and in the subbasin plan updates provided in the CBFWA FY 2000 Annual Implementation Work Plan. All of these documents have identified hatchery production as a critical element in a comprehensive basin salmon and steelhead restoration program.

In addition to the above efforts, this project must successfully go through a very detailed and thorough NPPC production project review process prior to implementation. A draft master plan has been completed and a final is scheduled for FY1999. Furthermore, the first decade of the Umatilla spring chinook program had associated monitoring and evaluation from which successes and learning will be applied to the new proposed production.

Response: In FY1999, the two Umatilla and Walla Walla hatchery projects were combined into one proposal. At the request of CBFWA, NPPC, and BPA, the proposals were done separately in FY 2000 to hopefully avoid confusion. Each project will have a separate NPPC master planning process. CTUIR submitted two separate proposals in FY2000 but, for an unknown reason, the two proposals that were circulated for review were the old UM/WW FY1999 proposal and the new Walla Walla FY2000 proposal (the new separate Umatilla FY2000 proposal was not circulated for review). Because of this glitch, the ISRP comment under project 20138 regarding duplication of these projects is understandable. However, there is no duplication other than the proposed incubation and rearing which will occur at the same S.Fk. Walla Walla river site. The Umatilla project (8805302) calls for spring chinook

production for the Umatilla River and the Walla Walla project (20138) calls for spring chinook and summer steelhead production for the Walla Walla River.

ISRP Comment/Question: It seems premature to proceed with another hatchery patterned after the Umatilla Hatchery and its associated satellite facilities until that program has undergone a review. The information now available to us suggests there are perhaps possibilities in the approach, but significant adjustments will be required. As one example, it seems fruitless to attempt to establish naturally reproducing populations of salmon in the face of high fishing rates that now occur in the ocean and mainstem Columbia River. This requires either an adjustment in the objectives or an enlarged strategy to bring the harvest managers into the picture.

Response: Harvest of Columbia Basin produced spring chinook in the Pacific Ocean is insignificant. Harvest in the Columbia River is also a minor impact at less than 10%. All tribal commercial spring chinook fisheries in Zone 6 have been closed since the 1970's. There are much greater man-caused fish mortality factors, such as those occurring at hydroelectric projects. CTUIR does not feel that managers should avoid establishing and striving for natural production goals due to current mortality rates. Mortality is being addressed across all “H’s.”

Harvest is carefully managed in the Umatilla Basin and spring chinook returns have provided Indian and non-Indian fisheries in seven out of the last ten years. Harvest quotas are established at a not-to-exceed 10% harvest rate.

Reintroduced spring chinook have been successful in spawning and producing offspring in the Umatilla Basin. Annual returns back to the Umatilla Basin have recently included naturally produced second generation adults (approximately 5 to 10% of the run).

ISRP Comment/Question: The project seems to be rushing into design and construction without adequate information. We have concerns about the absence of an analysis that examines the feasibility of the hatchery approach in this situation. It is unfortunate that hatchery programs can not begin with pilot projects to test their feasibility.

Response: The subject project proposes to add spring chinook production to the existing program. The reason for the proposed increase is because: 1) Additional production was called for in the original Umatilla Hatchery Master Plan (1990), but water was not available at the original site to meet total Umatilla spring chinook smolt goals; and 2) the existing Umatilla spring chinook program has been ongoing for a decade and results (adults returns, harvest, broodstock acquisition, natural spawning, etc.) have been the most promising, thus doing “more of a good thing” to meet original goals is being proposed. Operating a program at approximately 60% smolt production with monitoring and evaluation for a decade prior to adding the last 40% (this proposal) certainly should qualify as a pilot project.

ISRP Comment/Question: This one budgets $6.4 million for FY 2000 with no out-year costs, but there would be O&M costs in out years.

Response: As indicated in the proposal, operation and maintenance costs following construction are to be picked up under project 8343500 (Operate and Maintain Umatilla Hatchery Satellite Facilities) therefore no costs are identified in outyears.

**Project: 8805305 Northeast Oregon Hatcheries Planning And Implementation - ODFW**
Sponsor: Oregon Department of Fish and Wildlife

CBFWA tier: 1
ISRP review: Do not fund. The proposal is not scientifically sound; it lacks adequate detail on rationale and methods.

ISRP Comment/Question: This proposal is from ODFW to participate in planning and implementation of NEOH, particularly for spring chinook and possibly steelhead, coho, and sockeye. It is stated that planning might also cover species other than chinook; this is disturbingly vague.

Response: The Independent Scientific Review Panel (ISRP) comments suggest they did not understand the approach ODFW, CTUIR and NPT are taking to refocus LSRCP production through NEOH. Below is a brief discussion of this program, other NEOH efforts, previous scientific reviews, and explanation of staffing requested.

ODFW's activities under NEOH have primarily focused on redirecting LRSCP hatchery programs in the Grande Ronde and secondarily supported a limited level of planning for reintroduction and supplementation in other basins. The elements of this work are briefly outlined below.

Soon after listing of Snake River chinook under the ESA it became clear that many activities in the Grande Ronde basin would need to change to support recovery. At that time, a non-endemic hatchery stock (Rapid River) was used for LSRCP spring chinook production in the Grande Ronde. Soon after listing it was determined that the Rapid River stock was inappropriate to meet the goals of the LSRCP and ESA recovery expectations. In response ODFW, CTUIR and NPT developed and initiated the Grande Ronde Endemic Spring Chinook Supplementation Program (GRESCSP).

The main objective of GRESCSP is to use LSRCP hatchery production to bolster threatened Grande Ronde spring chinook populations. Whether supplementation can actually bolster natural production is unproven. Supplementation holds promise and is worth the inherent risk given the state of Grande Ronde spring chinook populations and the range of recovery alternatives open to us under the existing environmental, policy and political situation.

To meet this objective the GRESCSP incorporates a number of strategies. First, it sets aside high quality spring chinook spawning and rearing areas of the Wenaha and Minam basins as natural production reserves. Second supplementation is focused in the Lostine, Catherine Creek and upper Grande Ronde subbasins using captive and conventional broodstock techniques. Last, the potential to naturalize a hatchery stock to restore an extirpated population is being tested in Lookingglass Creek.

The captive and conventional broodstock techniques used in the Lostine, Catherine Creek and upper Grand Ronde subbasins under a single program. As noted in the proposal, this program is detailed in a long-term management plan submitted to NMFS under provisions of the ESA Section 10 Permit covering these activities (ODFW 1998). At the core of this program is a sliding scale of broodstock management. At low natural escapement this scheme directs that captive broodstock techniques be used. As natural tributary escapement increases conventional broodstock techniques are incorporated. As natural escapement increases further broodstock management shifts entirely from captive to conventional techniques. Ideally under this scheme, if escapement were to continue to increase hatchery support would be eliminated entirely.

This program is intended to limit risk to natural production associated with the physical collection of adult broodstock. It takes advantage of the lower intervention risk to natural production of captive broodstock techniques at lower escapement levels and the lower relative production cost of conventional techniques at higher escapement when natural production can support a greater level of intervention risk

Operations under GRESCSP rely on a collection of facilities. Lookingglass Hatchery operated by ODFW provides incubation and rearing facilities. NPT and CTUIR operate adult trapping and acclimation facilities located on the Lostine, Catherine Creek and upper Grande Ronde. ODFW and NMFS facilities are used to raise adults under the captive brood stock program at Bonneville Hatchery and Manchester.

NEOH funding associated with this project has supported the planning and implementation of the Lostine, Catherine Creek and upper Grande Ronde conventional broodstock component of the GRESCSP. Implementation has included engineering, construction, operations and monitoring. The majority of fiscal year (FY) 2000 NEOH funding requested is for continuing operation and monitoring (see Section 4 of Proposal 8805305).

Captive broodstock production activities have been independently supported through a separate BPA project (9801001). Additional monitoring is provided through the Spring Chinook Salmon Early Life History Evaluation (BPA Project 9202604). Monitoring of populations in the Wenaha and Minam is conducted under State and LSRCP funded programs. The effort to restore Lookingglass Creek production is supported by LSRCP. See Section 3 of ODFW's NEOH proposal for additional projects supporting this effort.

There is general concurrence that the Wallowa stock of summer steelhead used to support LSRCP programs in the Grande Ronde is not appropriate to meet current conservation and recovery expectations. NMFS has found that the Wallowa stock is likely to jeopardize listed Snake River and mid-Columbia steelhead and requires it be replaced with an endemic stock in the next 8 years (NMFS 1999).

While ODFW, CTUIR, NPT, NMFS, USFWS and others have discussed what an endemic Grande Ronde summer steelhead program might be, the specifics changes are still being planned. LSRCP and State funding have supported ODFW activities associated with this planning effort for the most part. As the elements of this new initiative develop new facilities will be needed. ODFW's NEOH proposal included funding for engineering and implementation associated with this effort during the FY 2000.

ISRP Comment/Question: It would be desirable to have an integrated master plan for all of the species to improve efficiencies and reduce overlap.

Response: While NEOH efforts have focused on spring Chinook, planning for restoration of other anadromous stocks has occurred also. As noted above we have directed our efforts to addressing the needs of existing spring chinook and summer steelhead programs. Where appropriate, the Council's three-step Master Planning process has been used when proposing BPA funding to address these needs.

Other efforts underway include planning for reintroduction of Grande Ronde coho and sockeye and Walla Walla spring chinook as well as supplementation of Walla Walla summer steelhead. Work to-date includes development of feasibility studies, initial drafting of master plan documents as well as initial engineering review and feasibility.

Most of ODFW's involvement in this effort is funded through State programs. As programs mature engineering, implementation and operation funding will be requested through appropriate programs (i.e., NEOH, LSRCP, NMFS, State, etc.).

ISRP Comment/Question: The methods sections refer to documents that purportedly describe methodologies and justification for activities associated with the program, but details were entirely lacking so quality of the approach could not be assessed.

Response: The proposal format did not allow a complete description of methodologies.

ISRP Comment/Question: The budget gives no defense of personnel requirements or capital costs. What will the 4 FTEs be doing? Capital costs "for facilities we expect will be needed" are not justified (the unexplained anticipated need does not provide rationale or justification for such expenditures).

Response: ODFW's FY 2000 NEOH proposal was for $660,422. This included funding for operations, monitoring, engineering and construction. Approximately half of this request was for continuing production while the remainder was for contractor services associated with planning. This planning element was primarily focused on preliminary engineering work for new endemic steelhead facilities.

A revised budget of $226,000 has been proposed to Columbia Basin Fish and Wildlife Authority for FY 2000 continuing production alone. Engineering and capital costs associated with an endemic steelhead program will be covered under project 8805301 at this point.

The bulk of personnel cost associated with continuing production is for Fish and Wildlife Technician 1s, Experimental Biology Aides (EBA) and Equipment Operators that conduct the day-to-day activities associated with this project. Technicians work at Lookingglass Hatchery where conventional broodstock adults are held and spawned, eggs incubated and juveniles reared prior to acclimation. EBA's conduct sampling associated with monitoring and fish heath programs. Equipment Operators drive trucks that transport adults and juveniles between Lookingglass Hatchery and tributary capture and acclimation sites.

Resumes included in ODFW's NEOH proposal are for principle managers that administer this program. This accounts for less than 0.5 FTE.

ISRP Comment/Question: The reviewers conclude that the proposal is of questionable benefit to fish.

Response: As discussed in our proposal, the GRESCP has been reviewed a number of times. The following provides a brief discussion of these reviews.

Under provisions of US v Oregon ODFW, CTUIR, NPT, NMFS and USFWS commissioned an Independent Scientific Panel to advise us on the appropriate elements of a hatchery program to meet Grande Ronde spring chinook recovery and management goals (Currens et.al. 1996). Currens et.al. found that the biological risk of using Rapid River stock in the Grande Ronde was greater than developing other broodstock options. They recommended a strategy incorporating natural production reserves, captive broodstock, endemic conventional broodstock, use of Rapid River stock in Lookingglass Creek while endemic programs were initiated, and monitoring. Currens et.al. also suggested co-managers "act immediately" to initiate program changes.

Following the advice of Currens et.al. ODFW, CTUIR, NPT, NMFS and USFWS developed the GRESCSP and prepared applications for the necessary ESA permits. NMFS initiated both peer and public review of these applications. After this review NMFS found this program is not likely to jeopardize the continued existence of ESA listed anadromous salmonids, would reduce short-term risk of extinction and issued ESA Section 10 permit 1011 to conduct the Grande Ronde captive broodstock program in 1996. Permit 1011 was later modified in 1997 to incorporate the endemic conventional broodstock element (see Project proposals 20512, 8805305 and 9801001).

Implementation of the GRESCSP was largely funded through the elements of the Council's program including NEOH. In compliance with the Council's 3-step process, the GRESCSP program underwent independent scientific review in May of 1998. This review used three independent reviewers facilitated by the Pacific Northwest National Laboratory (PNNL 1998) and focused on determining if BPA, ODFW, NPT, and CTUIR had adequately addressed concerns raised by the Council's Fish and Wildlife Committee, Council staff and outside experts. In summarizing this review PNNL states that:

"The project staff, for the most part, has responded to the technical questions of the Three-Step Process more than adequately. The various activities associated with the Grande Ronde Basin Endemic Spring Chinook Supplementation Projects appear to be well thought out and sufficiently coordinated. The provided documentation and the Project staff responses clearly demonstrate that the proposed program has been subjected to considerable technical and policy reviews. The Project staff appears to have a good monitoring and evaluation protocols in place for diseases, genetic effects and other potential concerns"

This review noted measurable time specific goals had not been identified by project proponents but acknowledged that was a difficult standard to establish at this point due to the low population status and the collection of influences that were beyond the control of project proponents.

Based on this review the Council approved project implementation and funding.

References:

Currens, K., J. Lannan, B. Riddell, D. Tave, and C. Wood. 1996. Responses of the independent scientific panel to questions about the interpretation of genetic data for spring chinook salmon in the Grande Ronde basin. U.S. v. Oregon Dispute Resolution, 1996.

NMFS. 1999. Biological Opinion on Artificial Propagation in the Columbia River Basin. Incidental Take of Listed Salmon and Steelhead from Federal and Non-federal Hatchery Programs that Collect, Rear and Release Unlisted Fish Species. National Marine Fisheries Service, Portland, Oregon.

ODFW. 1998b. Request for modification of Permit 1011 for scientific research and to enhance the propagation or survival of endangered Grande Ronde River Basin spring chinook under the Endangered Species Act. Oregon Department of Fish and Wildlife. Portland, Oregon.

PNNL. 1998. A Review of "Response to Questions for the Three-Step Process review of the Grande Ronde Endemic Spring Chinook Supplementation Projects. Prepared for Northwest Power Planning Council Staff by Pacific Northwest National Laboratory. Richland, WA.

**Project: 8806400 Kootenai River White Sturgeon Studies And Conservation Aquaculture**
Sponsor: Kootenai Tribe of Idaho

CBFWA tier: 1

ISRP review: Fund in part. Fund the research component. Do not fund capital expenditures until a comprehensive review of regionwide white sturgeon recovery efforts is complete. Do not fund kokanee portion of the proposal, objective 4, because the scientific basis for linking kokanee to white sturgeon is not justified.

ISRP Comment/Question: Fund the research component. Do not fund capital expenditures until a comprehensive review of regionwide white sturgeon recovery efforts is complete.

Response: It is agreed that a comprehensive review of region-wide sturgeon activities be completed as recommended by the ISRP. Funding should be provided to convene the sturgeon managers in the basin and a specific line item will be programmed into the FY2000 budget to participate in the region-wide review. The proposal may not have clarified the fact that coordination among sturgeon biologists already exists to some extent. While other project sponsors have proposed supplementation, the KTOI white sturgeon conservation aquaculture project is the only project successfully producing white sturgeon juveniles from wild broodstock. The KTOI staff initially spent time with experts in this particular field (Serge Doroshov UC Davis and Terry Patterson CSI) to learn the intricacies of the process. With the increasing success of the project, other project managers in the region have spent extensive time with the KTOI staff to learn the complexities of spawning and rearing this species. Also, a White Sturgeon Genetics Work Group was organized by Tom Rein to guide independent genetic research efforts and Pacific States Marine Fisheries Commission is facilitating an update of the 1992 White Sturgeon Management Framework Plan.

Regarding the funding of capital expenditures, it is important to note that the Kootenai River white sturgeon is an ESA species and has immediate recovery needs as mandated by the USFWS and addressed in the Kootenai River white sturgeon recovery plan. This project implements a Priority 1 action in the plan. The expanded rearing needs for white sturgeon families at the Kootenai Tribal Hatchery are immediate (to meet the goals of the Kincaid breeding plan and prevent disease outbreak) and will have to be dealt with quickly. The proposed development of burbot culture practices and future native fish broodstock development will go through the regional three step process.

ISRP Comment/Question: Vital information is left out of the background/justification section of this proposal. Numbers are given concerning targets for sustaining and rehabilitating the population. How were these numbers derived?

Response: Target estimates in the 8806400 proposal are the result of federal Recovery Team negotiations, based on theoretical annual mortality rates presented by Kincaid (1993) in his breeding strategy for this population. The numbers are "loose" because insufficient juvenile white sturgeon (< age 25) exist in the Kootenai River to calculate annual or cumulative survival rates to age at first maturity (approx. 20 yr. for females, males age 12-15). Released juveniles from the conservation aquaculture program, given several years of post-release survival, will allow calculation of empirically based annual and cumulative mortality rates for Kootenai River white sturgeon. These rates in turn will allow calculation of more accurate release numbers to meet target goals.

Conservation hatchery production numbers were initially developed with an end goal of 10-20 adults per family surviving to female age at first maturity (20 yr.) for two reasons: 1) To represent progeny of Kootenai River wild population genetics; and 2) to avoid over-representation of any particular haplotypes or genotypes as a result of the hatchery program.

The issue of optimum numbers of fish to reach sexually maturity per family remains un-modeled. We understand the importance of this estimate, and will pursue it in a way explained in the following response to Question 2, below.

ISRP Comment/Question: Was some population viability analysis done?

Response: No modeling has yet been completed regarding population sustainability/viability of white sturgeon specifically from the Kootenai River population. However, we have access to modelers (and electronic copies of their models) from the Oakridge National Labs (TVA, TN) who are currently contracted by Idaho Power Company (Boise, ID.) and actively modeling population viability of white sturgeon in the middle Snake River reaches in Idaho. One goal of this modeling is to provide approaches for addressing these same issues of sustainability and viability in white sturgeon populations throughout the Columbia Basin, including the Kootenai population. This model is available from ORL electronically, and we can run it using white sturgeon population data from the Kootenai fish.

Furthermore, researchers at the University of Idaho's Center for Salmonid and Freshwater Species at Risk, may be involved in model development to predict viability, sustainability, and inbreeding risks for white sturgeon from the Columbia Basin, specifically including Kootenai fish. Project 8806400 will monitor results of both modeling endeavors and incorporate results when appropriate.

ISRP Comment/Question: What life history structure will demonstrate that the conserved population is made healthy?

Response: Population structure (presented as length or age-frequency histograms; results of annual recruitment frequency), will be used to assess future population status. Substantive changes in the severely right-skewed age-frequency histogram of the Kootenai white sturgeon population due to future recruitment will serve well to demonstrate population health, along with population genetic data from a cooperative new research program from UI that investigates haplotype and genotype frequencies of white sturgeon throughout the Basin, including the Kootenai system.

For comparison, the lower Columbia River white sturgeon population (downstream from Bonneville Dam) is composed of > 95% sexually immature fish; this population also sustains over 50,00 fish recreationally harvested annually (DeVore et al. 1999). Alternatively, the Kootenai population currently is composed of approximately 90% age 25 and older fish (Paragamian et al. 1995; BPA 1997).

ISRP Comment/Question: How does the present structure compare with other populations that are intact (e.g., below Bonneville Dam)?

Response: This question was partially answered in the above response. In addition to the Lower Columbia River population, (downstream from Bonneville Dam) healthy fish (white sturgeon) populations are characterized by age-frequency distributions including higher numbers (and percentages) of younger fish relative to the Kootenai population. Excluding the recent input from this program's conservation hatchery, the shape of the age and length-frequency distributions for the Kootenai population have remained unchanged for decades, shifting to the right over time. This static distribution shape represents aging individuals from the same limited number of year classes growing older. Conversely, repeated and in some cases reliable annual recruitment in the lower Columbia River and reservoir populations maintain healthy left-skewed age and length-frequency distributions.

ISRP Comment/Question: Page 18 states, "Number of fish released per family will be adjusted in future years when actual survival rate is known". This presumes that the environment and therefore the risks are constant. Is this true? The hydrograph has been very unstable since the installation of the dam.

Response: Obviously, one would not claim environmental constancy in an altered ecosystem such as the Kootenai system. Rather, the text on page 18 could read "release numbers will be adjusted as soon as survival or mortality rates can be reasonably estimated, based on appropriate numbers of recaptured juveniles (wild or hatchery) from the system." The pertinent point here is that over- or under-representation could result from a hatchery program that

does not adaptively manage its release strategies based on the most complete and updated empirical data from that hatchery's monitoring program and other legitimate sources.

ISRP Comment/Question: The statement concerning losing an entire generation of spawners may be in error given the life span of white sturgeons, alarming though the missing age classes may be. Was the mean generation time for Kootenai white sturgeon formally calculated?

Response: The mean generation time has not yet been calculated for the Kootenai River white sturgeon population. It can be done, and could be a somewhat insightful descriptive statistic by which to further assess population status. This statement should be changed to read: "Although white sturgeon are a long-lived species, the Kootenai River white sturgeon population is at risk based on the absence of recruitment during the past 25 years, and the continued failure to reestablish natural recruitment beyond age one. Continued recruitment failure will serve only to further endanger this population."

ISRP Comment/Question: The description of how genetic structure of the population is to be monitored is inadequate. What is going to be indexed? heterozygosity? presence of rare allelles? What genetic analyses will be performed? protein electrophoresis? mtDNA? nuclear DNA? Who is the geneticist? Will this be subcontracted to a genetics group?

Response: MtDNA and nuclear DNA will be analyzed, including but not limited to D-loop length variation screen (mtDNA) microsatellite analysis (mt and nuclear DNA), and direct sequencing of mtDNA regions. Nucleotide primer pairs for eight separate microsatellite loci will be used to PCR amplify the intervening sequences between primers. All microsatellite primers have been used to previously amplify polymorphic loci in white sturgeon samples (May et al., 1997). An approximate 400 bp segment of the hypervariable, non-repetitive portion of the D-loop region will be sequenced from individuals from each family to assess the nucleotide divergence in this rapidly evolving portion of the mitochondrial genome. For methodologies using sturgeon see Brown et al. (1996), Stabile et al (1996), Miracle and Campton (1995), and Buroker et al. (1990). An automated DNA sequencer and nucleotide primers specific for this region will be used in this task. Geneticists include Dr. Madison Powell and consulting geneticist Dr. Don Campton. University of Idaho, ARI Fish Genetics Lab is subcontracted to perform the genetics portion of proposal.

ISRP Comment/Question: Will pedigree analyses be performed to examine success of different mating combinations?

Response: This can be done, but has not been done to date. We will address the feasibility of pursuing this issue. Unlike other animal and fish breeding programs, the logistics of spawning wild endangered white sturgeon lacks many of the luxuries of design flexibility these other species possess. For instance, a desirability or dissimilarity matrix approach has been used for salmonids in the Pacific Northwest to reduce the probability of spawning closely related broodstock and associated deleterious effects. In some of these cases, dozens to hundreds of potential broodstock are simultaneously available, along with added flexibility from cryopreservation. All these conditions are unavailable to our sturgeon spawning program.

ISRP Comment/Question: Will samples of wild fish be taken to monitor possible differences between hatchery and wild brood stocks?

Response: Yes. Samples from wild broodstock, their progeny groups, and an ongoing but separate analysis of the wild population all address the issues of genetics accompanying this hatchery program. A sub-contract with the University of Idaho's (ARI) Fish Genetics Lab is currently in place to provide this work. See response to above Question 7. for details.

ISRP Comment/Question: Given the several problems that have occurred in the past with holding fish, have risks of aquacultural failure been assessed, specifically of a Canadian "failsafe" facility?

Response: Yes. Risks are always being addressed, and the program has made a formal international agreement with the British Columbia Ministry of Environment, Lands and Parks to provide off-site "satellite" rearing space at the

Kootenay Trout Hatchery, Fort Steele, BC. The Kootenai (ID) Hatchery also recently completed exhaustive upgrades to minimize many risks associated with culture facilities.

Risks of the Canadian facility are currently being weighed against the risks of not pursuing this option. Currently, the demonstrated risks of using one facility and potential benefits of using the Kootenay Hatchery (BC) suggest that this is a feasible and viable option whose benefits justify its risks regarding its utility to the endangered population.

ISRP Comment/Question: Note that increasing interspecific competition of hatchery fish with wild fish was not mentioned as a potential unwanted side-effect, although it is raised as an issue in proposal 8806500.

Response: By definition, competition occurs only with the condition of resource limitation. Given the highly speculative nature of potential unwanted side-effects of interspecific competition, and the extremely low presence of juvenile white sturgeon in the Kootenai River (wild and hatchery), releasing fish is not rationally viewed as "adding fish to the system." Rather, the conservation aquaculture program is currently the only successful means of compensating for 20+ years of absent recruitment. This argument carries with it a particular bias which considers a released fish less fit or valuable than a wild one. Presently, the virtual absence of juvenile white sturgeon in the Kootenai system appears to present no threat of interspecific competition, based on presumed lack of resource limitation.

ISRP Comment/Question: Adding hatchery fish to a system that is nutrient limited increases pressure on wild fish.

Response: Adding naturally recruited wild fish to the same system will also theoretically increase "pressure" on wild fish. For the past 5 years, an attempt has been made to reestablish natural recruitment by using flow augmentation during the spawning season. To date, natural recruitment has not been reestablished. The white sturgeon recovery team has made the decision to use conservation aquaculture in the short term because they believe the risks associated with the "do nothing" approach far outweigh the risks associated with conservation aquaculture. The point is that if this were a serious biological issue in the short-term, it would have surfaced as a concern or a drawback to reestablishing natural recruitment. Either this argument should be applied to all sources of fish (hatchery and wild) or dropped as biologically irrelevant in the short term, in a river that currently has too few wild fish to estimate their numbers and survival rate.

ISRP Comment/Question: Food limitation seems important to define. Is this the reason for the kokanee work?

Response: Food limitation is very important for kokanee in the Kootenai/Kootenay system. Fortunately, Canadian scientists and managers long ago agreed to pursue a scientifically defensible, publicly supported approach to rectifying the food limitation problem. This has been successful since the early 1990's in the form of artificial nutrification of Kootenay Lake, the rearing area of all Kootenai River kokanee in the US (Idaho).

The reintroduction of kokanee was not considered until evidence that the artificial nutrification of Kootenay Lake had increased productivity in the South Arm of Kootenay Lake, where these native stocks of kokanee rear.

The ISRP strongly contends that kokanee work not be incorporated under white sturgeon contract. This is a perfectly acceptable position. However, the kokanee work has been performed under this contract since 1993 and is part of the NPPC's Fish and Wildlife Program. If this work is not funded through this contract, it could be funded as a separate resident fish contract (administratively more cumbersome) to address a native species in more perilous condition than the endangered white sturgeon population.

References:

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DeVore et al. 1999. DeVore, J. D., B. James, and R. Beamesderfer. 1999. Lower Columbia River white sturgeon: Current stock status and management implications. Washington Department of Fish and Wildlife. In Press.

Kincaid, H. 1993. Breeding Plan to Preserve the Genetic Variability of the Kootenai River White Sturgeon. Final Report to Bonneville Power Administration, U.S. Fish and Wildlife Service. Project 93-27, 18 pp.

May, B., C.C. Krueger, and H.L. Kincaid. 1997. Genetic variation at microsatellite loci in sturgeon: primer sequence homology in Acipenser and Scaphirhynchus. Can. J. Aquat. Sci. 54:1542-1547.

Miracle, A.L., and D.E. Campton. 1995. Tandem repeat sequence variation and length heteroplasmy in the mitochondrial DNA D-loop of the threatened Gulf of Mexico sturgeon, Acipenser oxyrhynchus desotoi. J. Heredity 86: 22-27.

Stabile, J. J.R. Waldman, F. Parauka, and I. Wirgin. 1996. Stock structure and homing fidelity in Gulf of Mexico sturgeon (Acipenser oxyrinchus desotoi) Based on restriction fragment length polymorphism and sequence analysis of mitochondrial DNA. Genetics. 144:767-775.

**Project: 8806500 Kootenai River Fisheries Recovery Investigations**
Sponsor: Idaho Department of Fish and Game

CBFWA tier: 1
ISRP review: Fund in part at reduced level (FY99 level?). Do not fund hypotheses 2,3,4 and 11; they are not well thought out, and 3 and 11 are not theoretically justified. Any subsequent funding must be subject to completion of a specific independent scientific review, via a visiting committee, and a comprehensive review of regionwide white sturgeon recovery efforts.

ISRP Comments/Question: Fund in part at reduced level (FY99 level?). Do not fund hypotheses 2,3,4 and 11; they are not well thought out, and 3 and 11 are not theoretically justified. Any subsequent funding must be subject to completion of a specific independent scientific review, via a visiting committee, and a comprehensive review of regionwide white sturgeon recovery efforts.

Response: The ISRP recommends not funding Hypothesis 2 (Monitoring and Evaluation of white sturgeon migration and spawning as related to environmental conditions). This Objective is the heart of the Kootenai River White Sturgeon Recovery Plan (KRWSRP) device to Monitor and Evaluate spawning flows called for by the Kootenai River White Sturgeon Technical Management Team. The KRWSRP has designated this objective be continued for a minimum of 20 years or longer until the Kootenai River White Sturgeon can be delisted. This point is noted in the Objective Schedule; it is also noted in the Short Description that the Kootenai River White Sturgeon is essentially listed under ESA, and in the Abstract. Annual flows are unpredictable and it is of paramount importance that Objective 2 be further funded. The KRWSRP requires that annual decisions are based on sturgeon migrations and spawning determined from this Objective. The ISRP has made a major presumptuous error, primarily basing the recommendation not to continue funding Objective 2 on the premise they believe the Objective has been achieved because two manuscripts were submitted for publication (Migration Behavior of Kootenai River White Sturgeon and Spawning Habitat Selection of Kootenai River White Sturgeon). Both manuscripts are under peer review and tell only a fraction of the story about the Kootenai River White Sturgeon. What the ISRP does not know is the actual content of these manuscripts and the fact the Kootenai River White Sturgeon has behavioral and spawning habits that are different from other populations of sturgeon. What is not known is whether these differences are natural or have been caused by environmental changes due to operation of Libby Dam. Objective 2 will help better understand this point.

The main theme of Objective 2 is to identify what spawning conditions bring off a successful year class, conditions that can be repeated to insure recovery. Although spawning conditions have improved, no link has been made to egg or year class abundance/survival with flows from Libby Dam. There are still many unknowns in the early life history of Kootenai River white sturgeon, e.g., whether or not sturgeon are rearing in Kootenay Lake or in the river. Much of the efforts in the Objective were design as M&E to help the KRWSRT in the annual decision- making process for flows and temperatures from Libby Dam. An enormous amount of data has been collected from this Objective but

there is more to it than just collecting data: investigative aspects have been added to these studies and have provided publishable information to build on our knowledge of white sturgeon and aid in recovery.

The ISRP recommends not funding Hypothesis 3 (food habits and food abundance) and 4 (growth of juvenile in relation to flow). In total, both Objectives are of little consequence to the Proposal Budget because not much time or effort is being expended on these studies, and the data is collected as part of Objective 2 (the collection of juvenile sturgeon). More importantly, this spring it was reported to CBFWA that these Objectives would be completed during the 1999 project year. Any savings will need to be applied to burbot studies because of the extreme urgency to recover this population, which is in greater jeopardy of demographic extinction that white sturgeon.

The ISRP recommends not funding Hypothesis 11 (Velocity impairing spawning fitness of burbot). A plausible explanation for the doubt of this Objective by the ISRP appears to be that they see this as a field study. However, in the Methods Section it was explained this was a laboratory study and a fish physiologist was assisting with the work. The ISRP criticized this hypothesis test because at least one panel member does not believe it can be done and does not know if the project sponsors are qualified. This hypothesis study has been discussed with Dr. Joseph Cloud, Biology Department - University of Idaho, and he feels confident that blood cortisol levels can be adequately measured in control and test conditions. The recommendation not to fund this study was premature. In the literature, stress tests in fish are common. There is absolutely no reason why this test could not be performed under Dr. Cloud's guidance. It will be of major importance to the recovery of burbot, a species that will be petitioned for listing by the Idaho Conservation League. There is strong evidence to suggest many burbot are not spawning because of stress due to difficult velocity reaches of the Kootenai River and high velocities caused by power peaking. Laboratory findings could be applied to Kootenai River winter water management from Libby Dam to insure a corridor for migrating burbot that is less stressful than present conditions. This Objective is of further importance because it has been nearly impossible to get cooperation from the USACE for test and control conditions for our field studies of burbot during winter.

The project sponsor welcomes and encourages a site visit.

ISRP Comments/Question: One weakness is the absence of a "cross-walk" between objectives, methods and budget.

Response: The project sponsor will concentrate on improving future documents "cross walk" between objectives, methods, and budget and increase the level of detail in the Methods Section of our Proposal. Several other ISRP comments will be helpful and will be used constructively.

ISRP Comments/Question: The proposal, however, does not adequately relate its efforts to similar BPA-funded efforts in Montana.

Response: This proposal should not be confused with the direction Montana has taken with mitigation. The main difference is Montana is mitigating for the loss of the Kootenai River and tributary habitat because of impoundment of Lake Koocanusa. The loss to Idaho has been the ecosystem of the Kootenai River because of flows from Libby Dam and loss of nutrients. Much of Montana's work involves off-site mitigation, while our projects are research and recovery directed. However, salmonid efforts may someday reflect more of a mitigative approach, as soon as it can determined the most important limiting factors to trout and whitefish populations.

ISRP Comments/Question: No resumes were provided as per instructions, so we cannot gauge the competence of staff to do the proposed work.

Response: Resumes were submitted for each of our staff as attachments to the project proposal.

**Project: 8815600 Implement Fishery Stocking Program Consistent With Native Fish Conservation**
Sponsor: Shoshone-Paiute Tribes of the Duck Valley Indian Reservation

CBFWA tier: 1
ISRP review: Fund for one year, because this project is ongoing. Future funding contingent on a proposal that considers more strongly the advantages of using native, rather than non-native stocks. Non-native fish substitution

raises substantial issues that the proposal does not adequately address, specifically whirling disease, competition, and the need for very strong reasons for not using native alternatives. If a put-and-take fishery is needed to replace lost harvest, then it should focus on native stocks rather than domestic stocks of rainbow trout. The current proposal is not biologically supportable, as it is not consistent with the other projects proposed in the subbasin or with other objectives of the FWP.

ISRP Comment/Question: Future funding contingent on a proposal that considers more strongly the advantages of using native, rather than non-native stocks.

Response: The Tribes' main goal is to have native fish stocks used in all of their fishing reservoirs. There are sustainable populations of native redband trout on the DVIR. However, due to lack of funding and priority levels of the resident fish managers, the genetic analysis of these populations has not taken place. If there are native populations of fish on the DVIR, restocking the reservoirs with native species as soon as possible will be explored.

ISRP Comment/Question: The proposal is disjointed and is vague or uninformative about many essential details of methods and monitoring/evaluation.

Response: An M&E plan is in place for the Tribes' fish stocking program. The plan was developed with the aid of BOR staff as well as University of Idaho fisheries professionals. The plan will also be inclusive in the overall M&E plan being developed under project # 20040.

ISRP Comment/Question: The proposal does not specify where stock would come from, whether they would be certified as disease free, or who would bear costs of whirling disease should it be introduced.

Response: The trout currently are being purchased from two hatcheries in the upper Snake River basin, Black Canyon Trout Farm and College of Southern Idaho. These are the only two facilities in the Snake River Basin that could be located that have "certified disease free" fish available. The Tribes would not purchase fish if they were not disease free. It is of great concern to the Tribes that everything possible is done to prevent whirling disease from entering their waters.

ISRP Comment/Question: The monitoring in this proposal is of the success of the fishery, but not of the effect of stocking on redband trout, which is essential to measure if the goal of retaining native fishes is to be met.

Response: The Tribes agree that there is a danger of possible side effects to native fishes. However, the reservoirs are screened at both the inlet and spillway areas. One reservoir spillway empties into the desert and it does not enter into the Owyhee River; the other spillway empties into an intermittent stream where the likelihood of survival is minimal. Another point on this subject is the Wildhorse Reservoir at the headwaters of the Owyhee River. Nevada Department of Wildlife (NDOW) stocks non-native species yearly, the outlet structure for this reservoir is not screened and yearly the water spills over the top of the dam with various species of fish having been observed spilling over also.

**Project: 8902401 Evaluate Juvenile Salmonid Outmigration And Survival In The Lower Umatilla**
Sponsor: Oregon Department of Fish and Wildlife

CBFWA tier: 1
ISRP review: Fund for one year. Subsequent funding contingent on a proposal that clarifies relationships to other projects and better describes methodology.

ISRP Comment/Question: This proposal is not a stand-alone project. It needs to be evaluated in the context of an umbrella project that would establish how it is contributing (or not) to achieving the subbasin objective. A goal-directed workshop would probably be of value to those responsible for planning and directing projects described in these proposals.

Response: Within the Umatilla basin, several forums exist that provide oversight, coordination, and information sharing among the various basin projects. These include the River Operations Group, Umatilla Basin Annual

Operations Planning Group, Umatilla Management, Monitoring and Evaluation Oversight Committee, and the Passage Technical Work Group. In addition, past and planned research and management reviews coalesce basin project information for adaptive management purposes and to identify information gaps and problem areas. These entities and processes facilitate the planning and directing of projects which minimizes operating in a vacuum.

The objectives and tasks of the project are also linked to the Umatilla Subbasin Umbrella and the biological goals and objectives contained within. Subbasin objectives for restoring natural populations of chinook and coho salmon and supplementing natural summer steelhead are addressed in strategies to monitor and evaluate the effectiveness of current fisheries restoration activities and evaluate the effectiveness of current management programs. These strategies are partially met by monitoring and evaluating the outmigration and survival of natural and hatchery produced smolts in the Umatilla subbasin.

ISRP Comment/Question: An example of what results when a proposal (or project) is considered in isolation is provided on page 9 of this proposal where it is stated "Increases in diverse populations of Umatilla River salmon and steelhead have resulted from artificial and natural production (CTUIR and ODFW 1990)." Numbers of adults are not given, perhaps because this project has responsibility only for evaluating juvenile survival and the author did not think it appropriate to include information on adults.

Response: The absence of adult return data in the technical/scientific background section is not a result of project isolationism. The author did not think this information detail was necessary. Considering the impression left on the reviewers, however, such ancillary data will be included in future proposals.

ISRP Comment/Question: The potential application of information from this project is not clear. How will the information on juvenile survival be used?

Response: The project provides information on both juvenile salmonid outmigration and survival to various entities and co-projects within the basin. Juvenile survival estimates are used by hatchery managers and researchers to fine-tune or adjust hatchery rearing or release strategies to optimize production and produce a better product. For example, results of poor survival for summer steelhead released in May has prompted a change in release strategy for this group of fish, and poor survival of yearling spring chinook salmon reared at Umatilla Hatchery has instigated a change in rearing strategy. In addition, migration timing and survival data identifies flow needs for fish and illuminates problem areas regarding passage. This information is used to develop recommendations for specific flow enhancement strategies to provide adequate migration conditions and optimize survival. For example, poor in-river survival of subyearling fall chinook salmon has activated a change in water release (flow enhancement) strategies in June and July. Results of reach-specific survival studies may further point to passage or survival problems associated with release sites.

Outmigration monitoring information can be applied to various uncertainties within the basin. For natural populations of salmon, steelhead, and lamprey, lower river monitoring provides additional information on life history characteristics and abundance that supplements information obtained in the upper river by Umatilla Tribes. This information is critical for life-stage specific survival estimates that allow an assessment of the success of re-establishing natural populations of chinook salmon. Monitoring in the lower river provides information on lower river fall chinook production, which is an integral component to the adult outplant strategy being conducted by the Umatilla Tribes. Supplemental tagging of natural fish captured in the lower river augments the PIT-tag database for these fish which will provide improved estimates of survival and migration timing. Remote detection in the lower river provides first capture information on tagged natural and hatchery fish.

ISRP Comment/Question: From the information given in the proposal it is not clear that the study objectives, to measure differences in survival, can be achieved. No details of the experimental design (to measure differences in reach survival) are given.

Response: The experimental design to determine whether survival is significantly different between control and treatment release locations will encompass several methods – 1) Migrant Abundance Method, 2) Survival Index based on relative detections, and 3) Single Release Model with Complete Capture History protocol. The Migrant Abundance method is described within the proposal wherein tag codes represent a batch mark for a specific cohort of fish. Tag detections in the lower Umatilla River are expanded by trap efficiency estimates; the population

variance is determined by the Bootstrap method. The Survival Index method is based on the proportion of tags from each release group detected at all detection sites and can be tested using the binomial approach. The project managers will obtain detection probabilities and survival rates with standard errors from the Single Release Model method using complete detection histories of treatment and control groups. Based on data obtained in 1998, sample sizes required for a 7% coefficient of variation of the survival estimate will range from 300 to 500 recaptures for all test groups. The managers will review mainstem tag detections from 1999 releases to make a final determination on realistic release and recapture sample sizes which will accommodate both the Survival Index and Capture History methods.

**Project: 8902700 Power Repay Umatilla Basin Project**
Sponsor: Bonneville Power Administration

CBFWA tier: 1
ISRP review: Delay funding until a thorough evaluation of success to date is completed. This project should be evaluated together with projects 8802200 and 8343600.

ISRP Comment/Question: This project should be evaluated together with projects 8802200 and 8343600.

Response: The proposers agree with the ISRP recommendation that these three projects be evaluated together. It was intended that these three projects would be evaluated together and is why they were grouped together in Section 3 of the proposal as Umbrella/sub-proposal relationships.

The ISRP also recommends that these proposals be evaluated as part of a higher, programmatic level review. These three projects have already been evaluated five times as part of comprehensive program planning. These efforts included the Umatilla Fisheries Restoration Plan (Boyce 1986), Umatilla Subbasin Plan (CTUIR 1990), Umatilla Hatchery Master Plan (CTUIR/ODFW 1990), Wy-Kan-Ush-Mi Wa-Kish-Wit, Tribal Restoration Plan (CRITFC 1995), and in the subbasin plan updates provided in the CBFWA FY2000 Annual Implementation Work Plan. All of these documents have prioritized the need to improve flows and physical passage conditions in the Umatilla Basin and recognized that long term operation and maintenance of these components is a key factor in the continued success of the Umatilla restoration program.

In addition to these planning documents, monthly programmatic management meetings (Umatilla Management and Monitoring and Evaluation Committee) and an annual project review are conducted and a Umatilla Basin and Hatchery Annual Operating Plan is developed. These in-basin forums provide coordination between the passage projects and other fish restoration activities and projects in the basin.

The proposers would recommend to the ISRP that all proposals be reviewed and evaluated by a group with more knowledge of the programs and projects in question. The recommendation by the ISRP to delay funding for these three critical projects reflects a lack of intimacy with the Umatilla program. Without these projects operating on a continuous basis, all the other anadromous fisheries projects in the Umatilla Subbasin are moot. These projects are essential for the continued success of the artificial production program and are required to maintain successful natural production in the basin as well. The managers would welcome tours to help evaluators become more familiar with projects in the subbasin setting. Based on the ISRP questions and comments it would appear that the reviewers did not fully read the proposals or missed important information contained in them. Specific responses to ISRP comments or questions for each of the individual proposals follow.

ISRP Comment/Question: Accomplishments are stated in terms of dollars spent to pump water from the Columbia River to (apparently) substitute for water that would have been withdrawn from the Umatilla River. No information is provided on the amount of water provided, or more particularly how much was left in the Umatilla River as a result of this project.

Response: The Umatilla Basin Project provides water for fisheries purposes through two types of exchanges with basin irrigation interests as outlined in Section 8. of the proposal. First, natural flows are exchanged on a "bucket for bucket" basis with irrigators. This means that for every "bucket" of water left in the stream by the participating irrigation districts, one "bucket" of water is pumped to them from the Columbia River. The amount of water exchanged under this program

varies annually based on natural Umatilla stream flows. The second part of the program guarantees a set amount of water for Stanfield Irrigation District from live flow and/or pumped Columbia River water sources in exchange for approximately 23,000 acre-feet of stored water in McKay Reservoir.

ISRP Comment/Question: No standards are mentioned for decisions about flow conditions that would call for decisions to pump or not to pump.

Response: It is noted numerous times in Section 8 of the proposal that decisions regarding exchanges and use of McKay storage water for flow enhancement are coordinated by project 8802200 and are outlined in that proposal. Again, it was the intent of the proposers that these three projects be evaluated as one.

As an additional side note, funding of this project by BPA is mandated by Congress under Section 204 of the 1988 Umatilla Basin Project Act. Decisions related to the continuance or level of funding for this project are Congressionally tied.

**Project: 8903500 Umatilla Hatchery Operation and Maintenance**
Sponsor: Oregon Department of Fish and Wildlife

CBFWA tier: 1
ISRP review: Delay funding until the proposal addresses the specific deficiencies noted in the comments. The project should be included in an Independent Programmatic Review of the Umatilla and Walla Walla hatchery programs.

ISRP Comment/Question: Delay funding until the proposal addresses the specific deficiencies noted in the comments. The project should be included in an Independent Programmatic Review of the Umatilla and Walla Walla hatchery programs.

The proposal notes that the hatchery water supply is only one-third the volume that formed the basis for planning and design of the facility and its associated projects. The experience of the reviewers is that overestimating available water supplies is not an uncommon occurrence. It reflects undue haste in proceeding with construction without necessary “ground truth” information. Water supplies should be assured prior to construction of any hatchery or satellite facilities.

The entire Umatilla Program should be reviewed by Council to see whether it is time to shift its emphasis. The hatchery water supply is warmer than anticipated. Survival of hatchery fish is one-tenth of that expected. There appears to be more weight in fish released than returning. This could result as a natural process in response to a focus on measurement of success in terms of smolts released, rather than adult contributions.

Response: Umatilla Hatchery, the result of Measure 700 (f) (1) of the 1987 Fish and Wildlife Program, was constructed after approval of the Umatilla Hatchery Master Plan by the Northwest Power Planning Council. Since it’s construction, the Hatchery Program has been operated based on the Master Plan.

The co-managers agree that a thorough review of the Umatilla Program is warranted. All of the planning documents cite significant uncertainties with regard to the adult returns predicted (Boyce 1986; CTUIR and ODFW 1990a; CTUIR and ODFW 1990b). Rigorous and costly measures have been implemented in the basin which should undergo periodic review to determine the effectiveness of the Program in meeting the Council’s objectives. Sufficient experience implementing the Umatilla Program and knowledge through monitoring and evaluation have been gained to conduct a thorough review of program’s results.

Given the investment of time and money into the fish currently being produced for FY2000, it seems most prudent to conduct a Umatilla Program review while continuing to operate the hatchery as approved under the Master Plan. A thorough Umatilla Program review will take significant time, more than is available prior to the beginning of the FY2000 contract period. The hatchery is a continuous, on-going operation. Production of juveniles planned for release in FY2000 are currently being reared in the hatchery. Delay in funding as proposed by the ISRP would mean that operations would cease and the current fish in production would perish.

**Project: 8906500 Annual Stock Assessment - CWT (USFWS)**
Sponsor: U.S. Fish and Wildlife Service

CBFWA tier: 1
ISRP review: Fund for one year. Subsequent funding contingent on a programmatic review. This entire set of smolt monitoring projects needs to receive a programmatic review with one of the goals to develop and justify a program-wide design that really is capable of delivering enough data, of high enough precision, to answer the management questions. In the future, this should be a candidate for a multi-year review cycle with review required only if major changes are made to CWT tagging, recovery or catch estimation procedures.

ISRP Comment/Question: The major decrease in funding requested (from $399,460 in 1999 to $110,586 in 2000) is due to work transferred to other projects or funding sources.

Response: This is basically correct, though the term "transferred" is misleading. Only one tagging project (Entiat NFH) was transferred to another funding source (Bureau of Reclamation). The term "returned" is far more accurate for the majority of the reduction. For administrative convenience, a few years ago, at BPA's request, nearly all BPA funded projects carried out by the USFWS through the Columbia River Fisheries Program Office (CRFPO) were put under the one BPA contract "Missing Production Groups, ID 8906500" (beginning with FY 2000 more accurately titled Annual Stock Assessment (ASA)), even though many had nothing to do with stock assessment via coded wire tags. These added projects (e.g. rearing fish for the Umatilla River and BPA smolt monitoring), coupled with the former project name "Missing Production Groups", led to much confusion outside the Service as to the scope and purpose of the ASA project. Beginning with the FY 2000 project cycle, the USFWS informed its cooperative partners that work performed by the CRFPO for other legitimate projects in the FY 2000 project cycle would be returned from the ASA project to be identified and justified under their original project proposals. BPA was informed that beginning in FY 2000 only work truly relevant to ASA should be administered under the ASA project contract.

ISRP Comment/Question: However, one concern is the forecasted 10% increase in costs each year, compared to lower projected increases (e.g. 0% to 3%) in most other similar projects.

Response: In preparing the FY 2000 budget, the actual costs of the FY 1999 work was examined and projections for FY 2000 were made. The actual increase for the entire FY 2000 proposal is approximately 5.8% more than the FY 1999 estimate for the same work. The out-years were left set at 10% because of the uncertainties of civilian contract tagging costs (competitively bid), cost of tagging wire, travel, and overhead. These factors affect the FY 2000 project and are incorporated, but are deemed a little less chancy for one year out than for multiple out-years.

ISRP Comment/Question: More information is required on the past success of this project. For example, is this project recovering sufficient numbers of tagged fish to successfully conduct annual assessments?
Response: Yes. An annual report is prepared that includes data from 12 of the 13 federal hatcheries in the Columbia River basin that release production fish directly. (Hagerman NFH does not release fish directly. The State of Idaho coordinates the off station release and recovery of fish reared at this facility.) Data for complete brood returns have been compiled and analyzed in the BPA's Annual Coded Wire Program - Missing Production Groups report (89-065), now more accurately named the ASA annual report. This data has provided the basis for adjustments to the tagging numbers (some up, some down), and elimination of tagging for one program (Eagle Creek NFH steelhead).

The tasks of the ASA marking and recovery program include applying CWTs to salmon, as well as recovering CWTs in fisheries and escapement areas. The data obtained in this program provides the basis for the monitoring and evaluation of these hatchery production programs. These data, and others, are used by the USFWS and a variety of fisheries managers to monitor basic population parameters including survival rates, population abundance and trends, dam passage losses, freshwater and ocean distribution and stray rates. These needs are identified in the draft version of the Multi-Year Plan (CBFWA, 1998, pages A-18 to A-19) and the Scientific Basis for Columbia River Production Programs (Council Document 99-4, pages 106-108).

Additionally, there are concerns with the status of many specific stocks returning to the Columbia River Basin. However, in order to accurately monitor those stocks, it is necessary to CWT a sufficient number of listed and non-listed stocks throughout the entire basin. CWT marking and recovery allows for: Accurate estimates of fish straying into and out of specific subbasins; Accurate annual preseason forecasts and final run size estimates; Accurate stock composition of runs to the Columbia River mouth; Comparison of survival rates between different stocks throughout the basin; Accurate estimates of inter-dam passage losses; Accurate estimates of freshwater and marine catch

By being able to conduct the aforementioned activities, the ASA program contributes data to better monitor the impacts on ESA listed stock from hatchery operations, river (dam) operations, fisheries, and environmental (development) modifications. This monitoring program ultimately provides the critically important basin wide ability to monitor the rebuilding of ESA listed stocks and the status of healthy and depressed non-listed stocks.

**Project: 8909800 Idaho Supplementation Studies**
Sponsor: Idaho Department of Fish and Game

CBFWA tier: 1
ISRP review: Fund for one year. Subsequent funding contingent on a programmatic review of the supplementation effort in the Snake River Basin similar to the Lower Snake Compensation Plan symposium of February 1998.

ISRP Comments/Question: The abstract indicates that the project assumes at the outset that supplementation is a worthwhile procedure, and that problems with it found in evaluations will be “fixed,” rather than taking the more responsible outlook that supplementation may or may not be a good thing, and the if insurmountable problems with it (unavoidable, fatal flaws) are found, it will be abandoned.

Response: This statement is incorrect. The first sentence of the proposal abstract states "the goal… is to evaluate the usefulness of supplementation as a recovery/restoration strategy… (p. 9).” The goal of the study is to determine if supplementation can work, and if so, what are the most effective types of supplementation to use.

ISRP Comments/Question: Study of natural populations is only vaguely mentioned.

Response: Reference to natural populations is stated repeatedly in the objectives (p. 12), and in Tasks 1.h, 2.a, 3.a (p. 14). The study design includes 12 control (unsupplemented streams, i.e. natural populations) and 19 treatment (supplemented) streams.

ISRP Comments/Question: The methods outlined cover most of the necessities in a general way, but specifics are lacking, e.g., Task 1.e, estimate late-summer parr densities from snorkeling surveys. How will the estimation be calculated? How will sample areas be chosen? How will these areas be covered by the divers (and under what standardized conditions of weather, time of day, time of night); what data will be recorded; and by what methods of calculation will the data be converted to density estimates? Unless such questions are answered, the appropriateness of the methods cannot be judged. The one authority (Schaeffer et al. 1979) on sampling shown for this task in companion proposals in the 89098 series is not referenced in this project’s proposal, and, in any event, does not appear on the basis of its title to be fully appropriate. The wording of Task 1.h is unclear: “Compare natural production or supplements populations to unsupplemented populations and baseline data.” This sounds undecided about what sorts of populations to compare with what other sorts. And why even consider comparing natural production with unsupplemented populations? Aren’t the two things identical?

Response: The proposal refers to the umbrella proposal and experimental design (Bowles and Leitzinger 1991) for details on methods. Regarding the question of what comparisons are being made (supplemented vs. natural vs. unsupplemented), yes, the unsupplemented and natural populations are the same. The confusion came about because of a typo in the proposal, task 1.h should state: “Compare natural production of (not or) supplemented populations to unsupplemented…” A five year report (1992-1996) will be submitted to BPA this summer which addresses other concerns in this paragraph.

**Project: 8909801 Evaluate Salmon Supplementation in Idaho Rivers (ISS)**
Sponsor: U.S. Fish and Wildlife Service - Idaho Fishery Resource Office

CBFWA tier: 1
ISRP review: Fund for one year. Subsequent funding contingent on a programmatic review of the supplementation effort in the Snake River Basin similar to the Lower Snake Compensation Plan symposium of February 1998.

ISRP Comments/Question: The choice of Dworshak or Rapid River stocks was not clear; are these two stocks being tested to determine which is "best" to supplement parr production in Pete King Creek?

Response: Rapid River stock was used to develop brood stock for Dworshak. During the onset of the ISS project (1988-1990) smolts from Dworshak were transported to the Idaho Department of Fish and Game's Powell facility. Adults from these stocks returned to Powell and have now become Powell stock. This stock, originally from Rapid River, is used every time ISS parr are stocked into Pete King Creek. In the experimental design there are streams designated as control streams, smolt treatment streams, and parr treatment streams. Pete King Creek is designated as a parr treatment stream. The purpose of the trial is to determine what life stage provides the quickest and highest response in natural production (Objective 3).

ISRP Comments/Question: Idaho Fish and Game concluded that summer counts of parr did not prove to be a useful technique. If that is the case here too and evaluations have to be made be made based on smolt or adult counts are numbers sufficient to provide useful statistical sensitivity?

Response: As mentioned in the proposal the critical assumption for this study is that mainstem passage and flow will allow for a net replacement/increase in adult-to-adult production. Low adult return rates are of major concern to this project. The importance of sample size in the overall analysis of the project is recognized. Given the low adult return rates and resulting low productivity in streams such as Pete King Creek, the project managers do not expect a high degree of statistical sensitivity. Although this may be the case in individual areas, the project sponsor believes that the data will be valuable for trend data and for statistical comparisons between Clearwater and Salmon River basins.

ISRP Comments/Question: Smolts from Kooskia (source of brood?) are stocked in Clear Creek where there is both an adult trapping facility and screw trap to monitor downstream migrants.

Response: The source of the brood stock for the fish stocked into Clear Creek is Kooskia stock. During the initial phase of the project fish were taken from Kooskia National Fish Hatchery. During the second phase of the project, the one that is in progress now, the brood stock comes from spawning natural returning adults to Clear Creek and supplementation fish. Supplementation fish are designated with either a left ventral clip or a right ventral clip.

**Project: 8909802 Evaluate Salmon Supplementation Studies In Idaho Rivers**
Sponsor: Nez Perce Tribal Fisheries/Watershed Program

CBFWA tier: 1
ISRP review: Fund for one year. Subsequent funding contingent on a programmatic review of the supplementation effort in the Snake River Basin similar to the Lower Snake Compensation Plan symposium of February 1998.

ISRP Comment/Question: Subsequent funding contingent on a programmatic review of the supplementation effort in the Snake River Basin similar to the Lower Snake Compensation Plan symposium of February 1998.

Response: It appears that the ISRP is recommending that a new step be added to the project evaluation process. Formal presentation/review of the purpose and results of any project are beneficial for improving the understanding of a project and disseminating results to date. This project has presented at both BPA project reviews (1997 and 1998).

ISRP Comment/Question: This is the Nez Perce Tribe's portion of the Idaho supplementation study in Lolo, Eldorado, Newsome, Squaw, and Papoose creeks in the Clearwater Basin; and Slate Creek, Johnson Creek, Lake

Creek, and the Secesh River in the Salmon River basin. The role of each stream is not described and readers are referred to the umbrella proposal (which explains the methods only at a general level).

Response: Given the constraints on proposal length and required areas to address, the focus of this proposal was limited to objectives and major tasks. The overall Idaho Salmon Supplementation study design (Bowles and Leitzinger 1991) is describe in the umbrella proposal, with the tasks highlighted in each sponsors sub-proposals. The managers found it impossible to comprehensively describe a 160-page peer-reviewed study design in 20 pages. The Nez Perce Tribe's portion of the Idaho Salmon Supplementation study includes both treatment (Newsome, Papoose, Squaw, Lolo, Slate, and Johnson creeks) and control (Lake Creek and Secesh River) streams.

ISRP Comment/Question: No progress is described to so no project assessment is possible, although the project (or its parent project) approaches ten years' duration. The project is basically the same as 8909800, and 8909801, except for facilities, budget, and personnel. Therefore it is unnecessary that the experimental design be reviewed as part of this proposal as it has already been developed and reviewed elsewhere.

Response: The study design (Bowles and Leitzinger 1991) clearly describes this as a long term evaluation. Several stages are outlined in terms of evaluation points. A five year summary report of baseline data is the only stage to be reached to date. A draft five-year report has been completed and the final report will be available during 1999.

**Project: 9000500 Umatilla Hatchery Monitoring And Evaluation**
Sponsor: Oregon Department of Fish and Wildlife

CBFWA tier: 1
ISRP review: Fund in part at reduced level. Incorporate internal hatchery monitoring into routine operations. Establish termination dates for some procedures

ISRP Comment/Question: Enough information now exists to make a decision about oxygen supplementation (Michigan raceways) without any further studies. There comes a time to make a decision.

Response: Although a substantial amount of information has been collected documenting juvenile health and survival, information on smolt-to-adult survival, the most critical part of the study of oxygen supplementation, is not complete. Subyearling chinook salmon were reared in Michigan raceways for five years to observe performance under a variety of environmental conditions. Results from rearing subyearling fall chinook salmon should be complete by 2001. Studies on yearling salmon and steelhead have not been completed because reduced water supplies limit the number of experiments that can be conducted simultaneously.

Comments from ISRP that enough information exists to make a decision on oxygen supplementation is premature and inconsistent with an ISRP comment made on the Umatilla Hatchery Operation and Maintenance Project (ID 890350): *"There appears to be more weight in fish released than returning. This could result as a natural process in response to a focus on measurement of success in terms of smolts released, rather than adult contributions.* Analysis of smolt-to-adult survival needs to be completed before a final decision on oxygen supplementation can be made. Decisions made at this time would be based on juvenile fish information and incomplete adult survival data, not on adult contributions.

ISRP Comment/Question: The monitoring and evaluation procedures described within the hatchery are routine, and ought to be a part of normal operations (e.g. monitor hatching success, growth, fish health, DO and temperature). The hatchery personnel should be collecting the information and a regionally coordinated body should be evaluating the data.

Response: The Columbia Basin Fish and Wildlife Authority sub regional team (SRT) reduced the recommended budget because of concerns similar to those expressed by ISRP. Intensive water quality monitoring has been dropped by this project. Routine monitoring (DO, temperature, hatching success, etc.) are currently monitored by hatchery personnel. Most hatchery data is reported to a centralized database. Routine fish health is monitored by hatchery personnel; however, disease monitoring and prophylactic treatments are not routine and are conducted by staff pathologists as part of standard hatchery and IHOT guidelines

ISRP Comment/Question: The number of full time personnel requested in this proposal seems high. The Michigan raceway study takes one-third of the project budget and offers to produce little or no additional information that would affect a decision.

Response: The Columbia Basin Fish and Wildlife Authority SRT reduced the recommended budget because of concerns similar to those expressed by ISRP. Personnel requirements could be reduced if data analysis of previous studies were all that needed to be completed and hatchery personnel were responsible for collecting routine data; however, as described in the original Umatilla master plan, other studies remain to be completed, including evaluation of steelhead rearing and the effectiveness of acclimation.

Project staff plan and monitor juvenile and adult survival using coded-wire and PIT-tagging. Personnel also monitor and analyze data from four recreational fisheries (coho, fall chinook, spring chinook salmon, and steelhead) for up to 10 months each year. In addition, a new telemetry study to monitor juvenile migration was initiated to better determine the fate of juvenile steelhead. Information derived from these studies is used not only to evaluate oxygen supplementation, but is also used to make adaptive management decisions about the restoration of anadromous salmonids in the Umatilla River.

Much of the budget costs of the Michigan study are related to the fall chinook salmon program and not specifically to the study of oxygen supplementation. Because of an agreement with NMFS, the managers are required to wire-tag tag all fall chinook salmon released in the Umatilla River. Tagging costs would remain as long as the fall chinook salmon were released. The managers disagree that current studies would not provide additional information that would affect a decision. Ongoing studies of oxygen supplementation will provide data on rearing at different densities within Michigan raceways and rearing of spring chinook salmon in Michigan and standard raceways.

ISRP Comment/Question: Straying rates of these hatchery fish ought to be discussed. It is not clear that “acclimation” is accomplishing its objective; perhaps alternatives should be explored or acclimation omitted.

Response: Straying is closely monitored with the Washington Department of Fish and Wildlife and is discussed in annual reports to BPA and annual updates to NMFS as required under section 7, ESA consultation. Although straying has not been reduced, the effects of straying are being effectively controlled through an intensive wire-tagging program that allows strays to be removed at Snake River dams. Straying may be related to a variety of factors, including poor attraction flows at the mouth of the Umatilla River or stock origin. The managers are considering releasing Umatilla reared fish directly from the hatchery or at Priest Rapids hatchery to evaluate the relationship between stock, acclimation, and release location, on straying and survival.

ISRP Comment/Question: The level of proposed field monitoring seems high. Standardized procedures should be established that are coordinated regionwide.

Response: Proposed monitoring is consistent with guidelines established in the Umatilla Master Plan to provide information necessary for managers to meet program goals. This document was developed by ODFW and CTUIR in cooperation with other agencies including BPA, CRITFIC, and the NPPC. Hatchery monitoring was also designed to provide additional information not normally collected by hatchery personnel. The large number of fish tagged to monitor juvenile and adult survival was selected to minimize variation and to ensure adequate collection of coded-wire tags from adults. Creel surveys are required to measure the success of newly emerging sport fisheries.

Hatchery monitoring is coordinated on a statewide basis and a centralized database is maintained.. Fish health monitoring and prophylactic treatments are coordinated by state pathologists and INAD guidelines. Data to monitor juvenile and adult survival using PIT-tags and coded-wire tags are coordinated through databases maintained by PSMFC.

ISRP Comment/Question: The analysis needs to be tied to a decision analysis framework that addresses both naturally produced and hatchery fish.

Response: Analysis of work conducted by this project is tied to an analysis framework that addresses natural and hatchery production at several levels within the Umatilla and Columbia Basins. Management and research biologists

evaluating natural and hatchery production in the Umatilla Basin meet monthly to keep updated on current work, avoid duplication of effort, and to ensure that goals are being met. Extensive analysis of data collected, including rearing, adult survival and contribution, and recreational fisheries was examined at a recent Umatilla Basin Research and Management Review workshop (January 1998). Effects of releases of fall chinook salmon on Snake River stocks are evaluated and documented in annual reports and updates submitted to NMFS. Releases of fall chinook program are being reevaluated by ODFW and CTUIR to determine new goals and strategies for hatchery and natural production. Future decisions will also be tied to the new ESA listing for mid-Columbia steelhead. Analysis of the hatchery program will undergo extensive review that will be tied to both natural and hatchery production.

**Project: 9000501 Umatilla River Basin Natural Production Monitoring And Evaluation**
Sponsor: Confederated Tribes of the Umatilla Indian Reservation

CBFWA tier: 1
ISRP review: Fund in part at a reduced level. Improve the focus. Review next year.

ISRP Comment/Question: There is overlap of tasks within two proposals: 9000501 and 8902401. Both projects intend to measure survival of juvenile salmon and steelhead using PIT tag technology.

Response: The ISRP suggests that this is a duplication of effort. While our work may appear duplicative, it is actually a coordinated effort split between two ongoing projects in order to optimize the use of personnel and equipment. As stated in the proposal, all Umatilla Basin projects are coordinated annually through an Annual Operation Plan and monthly through the Management, Monitoring and Evaluation Oversight Committee. Each project has objectives that require them to be at each of two separate tagging locations. The ODFW Research Office in Hermiston, Oregon is close to one of the tagging locations where hatchery and wild smolts are captured and tagged (Three Mile Dam RM 4.1). The CTUIR Research Office is much closer to the headwaters where wild smolts are captured and tagged (RM 70-90). Logistical consequences of geography dictate that the most efficient use of manpower is for both projects to PIT tag wild smolts at each end of the basin as originally proposed. ISRP could argue that if we PIT tag naturally produced juvenile salmonids in the headwaters, there would be no need for tagging at TMD. However, our primary objective is to examine survival rates and migration timing. By tagging groups near the mouth and in the headwaters, considerable inference can be obtained by examining differential survival and migration timing of groups tagged and released at the different locations. At Three Mile Falls Dam, ODFW is already tagging hatchery fish. Their work with hatchery smolts requires them to handle wild fish. Why not have them tag wild fish while the fish are in hand? It is possible for one project to tag at Three Mile Dam (RM 4.1) and in the headwaters (RMs 80-90), but it would require personnel to travel from 1.5 to 3 hours extra each day.

ISRP Comment/Question: To be realistic, the proposal to estimate smolt-to-adult return rates should include an analysis of the numbers of juveniles that would need to be tagged and the corresponding numbers of adults to be recovered in order to accomplish a useful estimate.

Response: Detailed discussion regarding smolt-to-adult survival estimates was deleted from the proposal for two reasons. First, the proposal requirements limited the total number of pages of text. Second, smolt-to-adult survival estimates are a secondary part of the PIT-tagging objective and will only be estimated if possible. The managers suggest that smolt-to-adult survival information is critical, but budget cuts have reduced the statement of work and personnel in half. However, the tribes always pursue an opportunity to learn more about salmon and steelhead in their basin when possible. Determining smolt-to-adult survival will be possible only through the successful completion of the following three conditions: 1) The successful development and implementation of PIT tag detectors (for adults) in the fish ladders of the mainstem dams (this is the primary uncertainty and depends on other projects); 2) At current tagging rates, smolt to adult survival of wild steelhead will need to be 0.6% or better to obtain a reliable estimate, and 3) Workers must capture and tag enough wild steelhead to utilize the 5,000 available tags.

The first condition depends on projects beyond the scope of influence. ISRP assumed that PIT tags would be collected from adults harvested or used for brood stock. Their error is understandable if they confused PIT tags with coded wire tags. Coded wire tags and PIT tags are different types of tags, with different tagging rates, different tagging methods, and different recovery methods. In the proposal, at the top of page 24, it is noted that the strategy

for estimating the smolt-to-adult survival was based on PIT tag detections at mainstem dams. These detections are contingent on the successful development and implementation of PIT tag detectors for adult salmonids in the ladders of the Columbia River dams (the juvenile detection systems are in place and functioning, but the adult detection systems are in development). The detection of PIT tags (in adults as they move upstream through the ladders) is the only strategy suggested for the successful estimation of smolt-to-adult survival using small numbers of PIT tags (<10,000/year).

The second condition may, or may not, be met. Smolt-to-adult survival rates for Umatilla River wild steelhead have never been directly estimated. The literature reports the survival rates of wild steelhead can be considerably higher than survival rates of hatchery steelhead smolts. The smolt-to-adult survival rates for Umatilla hatchery steelhead have generally ranged from 0.3 to 1.4% (Rowan 1999). It is expect that Umatilla wild steelhead smolt-to-adult survival could range from 0.4 to 2.5%. PIT tagging 5,000 wild steelhead smolts with a mean survival rate of 0.6% would produce 30 adult steelhead detections at the mainstem ladders and provide a reasonable estimate of smolt-to-adult survival. The actual results will likely vary from year to and may be different than expected.

The third condition (tagging enough fish) can be met if both M&E projects work cooperatively to PIT tag wild steelhead smolts at their respective locations. If the ISRP is interested in smolt-to-adult survival rates they should favor the coordination and cooperation of this project (9000501, Natural Production M&E) and the ODFW project (8902401, Juvenile Outmigration Studies). However, the current recommended level of funding will reduce the total number of tags. Ten to fifteen adult recoveries are expected. If smolt to adult return rates are higher than 0.6% then the detection of adults would increase proportionally. Until we have some initial estimates, we recommend additional tags and manpower to increase this number; however, budget constraints have dictated a reduced tagging program.

Please remember that the smolt-to-adult survival estimate is not the only objective for PIT tagging. Determining smolt outmigration survival and timing is still the primary function of the PIT tagging effort. PIT tagging would still be a valuable tool even without obtaining a smolt-to-adult survival estimate.

ISRP Comment/Question: All of the monitoring and evaluation proposals for the Umatilla Basin describe objectives to monitor natural production. There should be some monitoring of natural production, but this proposal seems overly broad.

Response: Rather than trying to understand how all the Umatilla Basin projects work together, the ISRP seems to jump to conclusions that projects are poorly coordinated. Many of their comments indicate they missed some information contained in the proposal or they did not understand it. On one hand, ISRP wants more monitoring and evaluation and criticizes a number of Umatilla Basin projects for not having an M&E component. On the other hand, they criticize the M&E projects for being “overly broad.” It appears that they cannot decide if they favor monitoring and evaluation.

To assist the ISRP and those who read their comments, we restate the following:

All Umatilla Basin projects are closely coordinated. The M&E projects conduct the M&E tasks for all the basin projects (see section 7, page 15, section 8 a. page 16, section 8 b. page 20, section 8 c. pages 20 and 21, section 8 f. page 28, and section 10 page 37 of the FY2000 proposal).

For example, the Natural Production M&E project PIT tags smolts to evaluate survival through the lower Umatilla River (to evaluate survival of wild smolts after enhancing fish passage, water quality and water quantity). ODFW’s Juvenile Outmigration M&E project conducts similar activities with hatchery smolts (logistics favor the splitting of these tasks among several projects, see comments above). The hatchery M&E project conducts routine hatchery M&E, evaluates general production groups, and researches the effectiveness of different hatchery rearing techniques. Because of the existing hatchery M&E program, the Hatchery and Satellite Facility Operation and Maintenance Projects do not have M&E tasks. In addition, the UBNPME project (9000501) conducts the fisheries M&E work for the habitat enhancement project.

ISRP Comment/Question: With respect to monitoring potential spawning sites, the workload seems formidable. Perhaps some of the questions could be answered in smaller bites. There is a need to streamline the activities. Monitoring at index sites could answer the same questions.

Response: The ISRP suggests that spawning surveys be reduced to index areas. We agree. In fact we have been conducting spawning surveys at index areas for ten years. Please read Task A in Objective 1 of the proposal on page 6, which states, "Document the number of redds and examine carcasses in index areas…." However, several index areas cannot provide adequate monitoring in the Umatilla Basin for four stocks of salmon and steelhead. Biologists working in the field for more than 30 years have found that redd densities are variable from year to year. Furthermore, the areas with the highest redd densities are also variable. Because of the variability of environmental conditions and the response of the adult salmon and steelhead, it is critical that reaches outside of the index areas are examined occasionally. This additional information enhances the confidence of the index site data and provides information on the utilization of spawning habitat by chinook and coho salmon that have been extinct from the basin for more than 70 years. To limit all surveys to a few areas would reduce the utility and quality of the data. It would also limit understanding of how hatchery salmon utilize spawning habitat in an under-seeded basin in a restoration setting. Spawning surveys also provide CWT recoveries critical to other M&E projects. Reducing spawning surveys would increase the number of CWT adults sacrificed at TMD. Currently, these chinook are allowed to spawn naturally because enough CWTs can be recovered off the spawning grounds.

**Project: 9001800 Evaluate Rainbow Trout/Habitat Improvements Of Tribs. To Lake Roosevelt**
Sponsor: Colville Confederated Tribes

CBFWA tier: 1
ISRP review: Do not fund this year. Subsequent proposals should provide a thorough analysis of results to date, as noted in the ISRP's FY99 Appendix A comments.

ISRP Comments/Question: Do not fund this year. Subsequent proposals should provide a thorough analysis of results to date, as noted in the ISRP's FY99 Appendix A comments.

Response: The ISRP seemed to be inconsistent with the comment that no reporting of results and the recommendation of "do not fund." Compare funding approval to the following: Yakima Nation- Riparian/Wetlands Restoration (9206200) which had no data to evaluate effectiveness and had not demonstrated success in 8 years; Project #9502700 Collect Data On White Sturgeon Above Grand Coulee Dam - four years with no results; Project #9106000 Pend Oreille Wetlands Wildlife Mitigation Project- Kalispel - seven years with no management plan (data on target species); Project #9700900 Evaluate Rebuilding The White Sturgeon Population In The Lower Snake Basin - four years and $400K spent with no study plan or data collection; Project #9401805 Continued Implementation of Asotin Creek Watershed Projects, Project #9401806, and project #9401807 - little information about any benefits.

ISRP Comments/Question: This is strictly a monitoring and evaluation proposal to determine the effectiveness of past habitat improvement projects in terms of perceived habitat quality, fish abundance, and fish use. It is an existing project that does not provide enough results of its work since funding began several years ago to show benefit to fish and hence does not warrant continued funding. The proposal cites only the FWP as its basis, with no relationships to other projects in the Upper Columbia Basin indicated (when it is clear from other proposals that there is a large, coordinated, regional effort). Neither the Past Accomplishments nor the Project History sections catalog results in terms of fish increase (not even citation of BPA annual reports), only that they did the work. There is good background and rationale, however.

Response: At the time the year 2000 proposal was submitted, analysis of the data for this project had not been done. This project was done in three phases: Phase I baseline data collection, Phase II implementation, and Phase III monitoring and evaluation. The data for the first two phases has been analyzed since the proposal was presented in the fall of 1998 (Phase I and II Final Reports). Data thus far for Phase III (monitoring and evaluation) have also been presented since last fall (1997 and 1998 Annual Report(s) and two FY1999 quarterly reports). Data for trends (or benefits for) of fish, adult and juvenile, have not been done to date primarily because returning fish average four years in age and this phase has not been operating that long (1996); the year 2000 would be the forth year. At the

time of the proposal (fall 1999) data could not provide any trends of other information because the third year (fall 1998 through fall 1999) of data collection was not yet finished. Project objectives for Phase II were met as listed in the Past Accomplishments part of Section 4. Passage success has been demonstrated, but not articulated directly, by population estimates of juvenile rainbow trout in reaches that the species previously did not occur (three streams).

ISRP Comment/Question: The proposal states that statistical analysis procedures are not established, even at a time when the study is nearly complete.

Response: This is a valid concern. However, most of the projects reviewed do not have statistical methods in the description of the project or methods section. A plan will be developed, most likely consisting of linear and multivariate analysis. Data will be analyzed to examine trends over time of various factors, such as substrate/pool-riffle ratio/large woody debris compared to fish densities and/or trapping numbers, or fish trapping compared to peak flow data to examine efficiency.

ISRP Comments/Question: Overall, the monitoring program appears to be sound, but there is very little detail presented on methods. Clear reporting of results-to-date could allow evaluation of soundness. More discussion should be offered on why certain techniques (e.g. Channel Stability Evaluation Procedure and Timber, Fish and Wildlife Monitoring Procedure) were chosen over alternatives.

Response: The methods used for the habitat data collection part of this project are listed and only briefly discussed in the proposal due to the limited space for presenting the project (TFW Habitat Monitoring and Channel Stability Evaluation Procedure). There are whole publications describing the use of various protocols which cannot be elaborated on because of the space issue. Some minor alterations have been made, but are just that - minor, not warranting the space that it would take to explain them. For example, substrate composition and large woody debris counts were not taken in 1996 and 1997 due to changes in protocol by TFW. They have been added back into the habitat surveys in 1999 and 2000 to compare to data taken originally in 1990, although the methods in 1990 were not spelled out very well. The basic methodology should not change significantly if analysis is going to be consistent (oranges versus apples). Additional information may be used to “weight” data trends (such as flood water level or weather patterns and the data collected) as an adaptation.

**Project: 9004400 Implement Fisheries Enhancement Opportunities: Coeur D'alene Reservation**
Sponsor: Coeur d'Alene Tribe

CBFWA tier: 1
ISRP review: Fund in part. Objectives 1, 2, and 4 are OK for multi-year review cycle, review in FY2003 for reporting of results. Do not fund objective 3 (24% of budget), the put-and-take trout pond objectives, until they are better justified and subjected to environmental review for potential impacts to native biota.

ISRP Comment/Question: Do not fund objective 3 (24% of budget), the put-and-take trout pond objectives, until they are better justified and subjected to environmental review for potential impacts to native biota.

Response: Declining native salmonid fish stocks, in particular, westslope cutthroat trout (*Oncorhynchus clarki lewisi*) and bull trout (*Salvelinus confluentus*) in the Coeur d'Alene Basin caused the elimination of traditional subsistence fisheries by Coeur d'Alene tribal members. The annual runs of anadromous salmon and steelhead are now extinct from traditional Coeur d'Alene tribal fishing areas. Dams were constructed on the Spokane River at Monroe Street in the City of Spokane, and Little Falls farther downstream, which initially cut off the anadromous fish runs from the Coeur d'Alene Tribe. These fisheries were further removed by the construction of Chief Joseph and Grand Coulee dams. These actions forced the Tribe to rely solely on the resident fish resources of Coeur d'Alene Lake. Over the last several years, poor fishing conditions have severely limited the ability of the Tribal Community to harvest desirable fish species in any acceptable numbers. The reasons for this condition were described in the project proposal (9004400 and 9004402). The Coeur d’Alene Tribe has made the difficult decision to maintain a strict wild fish management policy for traditional fishing areas, primarily important cutthroat trout streams on the Reservation. The emphasis is to restore these areas in order to optimize conditions for expansion of wild stocks (restoration of habitat). However, substantial increases to these populations to support any sizable harvest goals are not expected for some time and may require supplementation to rebuild the stocks.

Since the Coeur d'Alene decided to close streams to harvest in sensitive drainages on the Reservation as the principal method of protecting and promoting wild stock expansion, a hatchery oriented "put and take" fisheries program was implemented. To provide for reasonable harvest of desired species in the near future it was decided that a series of trout fishing ponds located in strategic areas would best serve the need for an alternative fishery on an interim basis. To protect the integrity of the wild fish restoration projects none of these ponds would be placed in drainages (or entire watersheds) where restoration is occurring. This will minimize the chance of interaction between hatchery and native fish species. Additionally, all ponds would be closed basin fisheries to prevent genetic introgression as well as spread of disease.

Much thought has been put into this program and it potential effects on native biota. Site selection ensures that accidental transfer of fish into the wild is minimal. These ponds will be built to withstand at least a 100-year flood. Each pond will be able to pass water equivalent to a 50 year flood with no risk of losing fish. The water sources for each of these ponds are located on intermittent streams or springs. If these fish accidentally escape, they have nowhere to go. The initial budget is skewed toward construction costs; however, outyear costs reflect a much decreased operations and maintenance only budget. Given the tribally imposed moratorium on subsistence harvest (or any type of harvest) of fish in traditional areas, this program represents a reasonable and prudent alternative means to maintain compensatory harvest opportunities for the Reservation community.

ISRP Comment/Question: It needs to present more detail on interim results – more interpretation of where they are in relation to where they began and where they want to go.

Response: Based on population estimates conducted for target tributaries in 1993-1994 and 1996-1998, it appears that the cutthroat trout populations in any given year are quite variable; however, a general negative trend in population growth has been observed over the last 50 years. An exercise described by McIntyre and Rieman (1993) was replicated for Reservation tributaries in order to predict the probability of persistence for cutthroat trout populations above a threshold value of 100 individuals. Our predictions indicate that none of the remaining populations on the Reservation have greater than 70% probability of persistence over the next 100 years, given current habitat and water quality conditions. This result suggests that these populations are at risk and that effective conservation and reduction of the risk of extinction for these populations will require the restoration of well-connected mosaics of habitats, as well as associated long-term removal of limiting factors.

Work completed under this project to date has set the stage for reducing the risks of extinction characterized as deterministic, genetic, and stochastic by identifying the primary limiting factors for cutthroat trout. Deterministic extinction is of particular interest because it can occur with the permanent or long-term loss or change of a critical component of habitat (Gilpin and Soulé 1986), and is thought to be the primary risk associated with Reservation populations. The availability of summer rearing habitat for cutthroat trout has been found to be a primary constraint on tributary populations. The range of suitable summer rearing habitat in each of the target watersheds has been significantly reduced when compared with the historic range of the fish. It comes as no surprise that population estimates have consistently shown the abundance of juvenile cutthroat trout to be greatest in first and second order tributaries where water quality conditions are most favorable. Typical base flow conditions, however, force juvenile trout into small pools where competition for space and food may occur. Furthermore, as crowding becomes more pronounced in late summer, displacement of fish into water quality limited reaches may be a significant source of mortality.

Restoration projects completed over the last three years have been successful in ensuring the long-term improvement of summer rearing habitat for juvenile fish. Landowner agreements provide protection and enhancement for more than 350 acres of upland habitat and 3 miles of stream channel. More than 17,000 trees and shrubs have been planted to enhance water retention and riparian function, particularly with respect to temperature control and reduction. Constructed wetlands have reduced non-point source pollution from 250 acres of farmland. Planned projects will increase woody debris loading to improve instream cover for juvenile fish, and create additional pool habitat. The density and diversity of fish food organisms is expected to respond favorably to these changes as well. Continued emphasis will be placed on riparian enhancement by planting native trees and shrubs.

The Habitat Quality Index (HQI) model of Binns and Eiserman (1979) has been modified and adopted to demonstrate changes in the carrying capacity of Reservation tributaries based on expected improvements in habitat

attributes. The HQI Model II predicts trout biomass using eleven attributes: late summer stream flow, annual stream flow variation, maximum summer water temperature, nitrate nitrogen, fish food abundance, fish food diversity, instream cover, eroding stream banks, submerged aquatic vegetation, water velocity, and stream width. Initial tests using measured data from Reservation tributaries suggested a strong relationship between model predictions and trout standing crop. The model explained 83% of the variation in trout standing crop for 8 tributaries that were tested (R = 0.915). The current carrying capacity and interim predictions representing 25%, 50% and 75% restoration objectives are presented in Table 2.

ISRP Comment/Question: This project has good coordination with other projects, but needs to specify how its activities justify a large budget and how they are different from enhancement under the wildlife project?

Response: Restoration efforts for FY2000 involve a high level of commitment to planning, implementation, and monitoring/evaluation activities. Personnel and fringe benefits comprise 63% of the total budget. These line items cover administrative oversight, project supervision, NEPA compliance, and all other personnel costs. Staffing requirements include a restoration project coordinator, one full-time habitat biologist, one full-time biologist/teacher, one full-time technician supervisor, 6-8 seasonal technicians and one half-time administrative assistant, plus cost shares with other projects for the program manager and fisheries project supervisor.

This staffing level allows for project implementation by qualified personnel who have developed working relationships with private landowners and local agency representatives and who are familiar with local watershed conditions as well as the relevant management issues. Project personnel review planned projects for NEPA compliance, implement all restoration projects, collect water quality samples, maintain and stock trout ponds, and conduct site specific monitoring and evaluation on an annual basis. The Tribe has endorsed an implementation approach that favors biotechnical techniques, minimizes the use of off-site contracting services, and necessarily is quite labor intensive. We believe this approach provides the greatest benefit/cost ratio and ensures that a conservation ethic is engendered in the locally affected communities.

**Project: 9004401 Lake Creek Land Acquisition And Enhancement**
Sponsor: Coeur d'Alene Tribe

CBFWA tier: 1
ISRP review: Fund. OK for multi-year review cycle, with review in FY2003 for reporting of benefits to target species.

ISRP Comment/Question: Only unwanted side effects seems to have been left out of the discussion.

Response: All project activities will be oriented at enhancing and sustaining the ability of the project site, and more importantly, the Lake Creek Watershed to support healthy fish and wildlife populations (with emphasis on native species and their habitats). No “unwanted side effects” are anticipated as a result of project implementation efforts. Adaptive management principles will be used as necessary to deal with any unexpected problems that may arise from natural and artificial stresses that are beyond the project sponsor’s control.

ISRP Comment/Question: The proposers need to be more specific about outputs and measurable milestones.

Response: The comment regarding more specific outputs and measurable milestones appears to be directed at monitoring the effectiveness of land management efforts on the project site. At this time (7/1/99), title to the project is not yet secured. This will be the measurable milestone for the year. Once full management rights to the property have been acquired and the property has been secured, a complete habitat inventory will be completed.

Once the baseline inventory is complete and any habitat deficiencies are identified, a site specific management plan will be developed. All habitat enhancement and long-term operation and maintenance efforts that may be required for the property will be described in the site specific management plan that will be drafted after management rights have been secured. All enhancement efforts and operation and maintenance activities will be consistent with the guidance documents that are currently being developed by the regional wildlife managers. A critical component of this plan will be the design and implementation of a long-term monitoring and evaluation effort. The results of this

effort will be used to determine any necessary adaptations in management strategy. It is anticipated that the monitoring efforts will need to take place in two general forms: 1.) The floral response to land management efforts, and 2.) Faunal response to land management efforts (particularly their response to habitat enhancement activities). These results will then be compared to a desired future condition that will be identified in the project management plan to determine if management goals and objectives are being met or if management techniques need to be revisited and adapted.

**Project: 9005500 Steelhead Supplementation Studies in Idaho Rivers**
Sponsor: Idaho Department of Fish and Game

CBFWA tier: 1
ISRP review: Fund in part, but do not fund the new tasks related to the genetics subcontract due to lack of adequate review information. The proposal needs a better description of who the genetics subcontractor is and what they are going to do. The reviewers are not provided adequate description of the methods the subcontractor will use, let alone the subcontractor's qualifications. The proposal should be included in the programmatic review of supplementation.

ISRP Comment/Question: Fund in part, but do not fund the new tasks related to the genetics subcontract due to lack of adequate review information.

Response: This project has a study design published by BPA and the experimental design has been passed through a technical advisory committee that did not have the concerns raised by the ISRP. This may suggest that the ISRP may not be basing their review on facts that directly relate to this project. The proposal also addresses far more than just steelhead studies. More information could be provided from an on-site review by a qualified geneticist.

ISRP Comment/Question: The proposal needs a better description of who the genetics subcontractor is and what they are going to do. The reviewers are not provided adequate description of the methods the subcontractor will use, let alone the subcontractor's qualifications.

Response: The IDFG did not deem it an efficient use of time to develop a detailed design and to interview potential subcontractors until funding was secured. Additionally, the managers are unaware of "unqualified" subcontractors performing genetic assays. The IDFG questions whether it is the role of the ISRP to approve of specific subcontractors.

ISRP Comment/Question: The proposal describes plans to develop a genetic database for steelhead in Idaho. If approved, the study should be closely coordinated and developed with Project 8909600. Findings reported under 8909600 include statements regarding progress in steelhead genetics, but it is not clear how these findings were incorporated into the present study plan. How does this work fit in with the genetic work done by Waples et al.?

Response: The IDFG is aware of other genetic work in the Snake River basin and this work was proposed following conversations with Paul Moran and Robin Waples of the NMFS, among others. Waples and Moran have focused their efforts on chinook salmon. They have little data on wild steelhead populations in Idaho. IDFG proposed this genetic work because there is no database that evaluates the genetic stock structure of wild steelhead populations in Idaho. The lack of a statewide steelhead genetic database and the need for one was documented on page 17 and 18 of the FY2000 Proposal form.

ISRP Comment/Question: The project is difficult to evaluate and confusingly written. There are too many objectives, and the objectives have flip-flopped during the project's history—apparently without having any of the "experiments" brought to completion. Each component of the project should be submitted as a separate proposal and reviewed on its own merits.

Response: The ISRP did not state why the project was "confusing" and "difficult to evaluate," making it impossible to develop a response to this comment. An extensive experimental design was written for this project and submitted to BPA in 1992 and was published in 1994. The project design was reviewed by personnel within and outside IDFG and was not found to be difficult to evaluate or confusing. The project proposal form was filled in with excerpts from this experimental design. The experimental design identified seven objectives; however, three objectives were

dropped the first year of the project's implementation due to lack of funding. IDFG has focused this project on the remaining four objectives identified in the project review form. This project has four objectives identified in the FY2000 form. The objectives were the same in the FY1999 form. The managers do not understand how the ISRP arrived at the conclusion that objectives have "flip-flopped." IDFG disagrees that there are "too many objectives" and that breaking the project up into component parts will be an expensive undertaking due to increased administrative and bureaucratic processes.

ISRP Comment/Question: The project history contains detail on activities but less information on results and their interpretation.

Response: Objectives 1 and 2 are long-term experiments hence, results can not be expected on a yearly basis. For example, the evaluation point for Objective 2 is age 1 parr production from returning adults that were outplanted as fingerlings in 1993 – 1996 or smolts in 1996 - 1999. The first adults from these stockings returned this spring and most of the adults will return in the years 2000 - 2002. The age 1 parr production from these adults will be assessed in the years 2000 - 2003. The project also monitors and collects life history information on steelhead, and is collecting adult-to-adult escapement information for wild steelhead in one of the premier steelhead streams in Idaho. There are only two other steams in the state where adult-to-adult information is being collected for wild steelhead. The life-history information (parr densities, adult escapement, PIT-tag studies) is being compiled into a five year report that is in progress.

ISRP Comment/Question: If the proposed project cannot test the real objective of supplementation, the development of a more abundant population of naturally spawning wild fish, why do it? To some extent, the project seems to be planned as a testing of traditional hatchery practice against supplementation, but not a test of supplementation against unassisted wild reproduction as should be the case. Is this "reintroduction?"

Response: IDFG stated in Objective 1, "Assess the performance of hatchery and wild brood sources to reestablish steelhead in streams where extirpated." If the ISRP read the objective carefully (and the tasks) they would not ask the question whether this was reintroduction. It is and was spelled out in Objective 1. In Objective 1 IDFG outlined a plan to assess stocks (hatchery and wild) to reestablish steelhead, not to use supplementation to increase runs where wild fish remain. The managers continue to outplant hatchery fish from Sawtooth Hatchery and monitor parr production to evaluate whether that stock can be used to establish a naturally spawning population. If it can be, there may not be the need to "mine" wild fish to use as a brood source.

ISRP Comment/Question: The proposal is not clear about the end point. There is no termination date for the work.

Response: The monitoring portion of this project should continue until steelhead are recovered. The stocking phase of Objective 2 was completed in April 1999. Most adults will return in 2000 - 2002 and age 1 parr production will be assessed in 2001 - 2003.

**Project: 9007700 Northern Pikeminnow Management Program**
Sponsor: Pacific States Marine Fisheries Commission

CBFWA tier: 1
ISRP review: Fund, but this project may benefit from an in-depth cost-benefit analysis with consideration of alternative methods of predator control or alternative strategies of deliveries.

ISRP Comment/Question: This publication indicates good management of past activities and continued inspection of results. It was unfortunate, however, that several of the key references were not yet available or that supporting data was not presented.

Response: Timing of the proposal process coincided with the period in which some key manuscripts were still "in press" (accepted for publication, but not yet in print). However, all information presented in these papers was first published in the final report of 1990-96 research (Ward 1998), which is available from the BPA library. The proposal also clearly states that all papers are available from David Ward, Oregon Department of Fish and Wildlife.

ISRP Comment/Question: Not all of the component projects appear to be equally successful and it is recommended that the budget request be broken down by sub-project (reward sport fishery, dam angling, and site specific fishing) to allow better cost/benefit analyses.

Response: This information is available by referring to the relative cost of each objective. The sport-reward fishery (Objective 1) includes 70% of the total cost. The dam-angling and site-specific fisheries combined (Objective 2) include 15% of the total cost. Evaluation of the fisheries (Objective 3) includes 10% of the total cost, and administration (Objectives 4 and 5) includes 5%.

ISRP Comment/Question: Due to the high annual cost in this project, reviewers suggest that it may be time to creatively re-think how this program could be delivered. Given that squawfish are long-lived and slow growing, and that the number of squawfish that are being removed appears to be declining in recent years, a cost/benefit analyses should be conducted to assess alternative predator control strategies. Running the predator removal program every second or third year may be equally effective; or less expensive designs could be developed for a variety of strategies, including running the program in alternate years but offering increased incentives.

Response: The number of fish harvested annually has declined, *but the exploitation rate has not.* This result is to be expected with a successful control program as the overall number of large fish decreases. In addition, numerous alternatives for running the program have been analyzed. For example, in May of 1997, a predation model (Ward 1998; Friesen and Ward In Press) was used to examine the effects of suspending the program for 1998 and 1999. Suspending the program resulted in immediate, large increases in predation losses, which were not mitigated in future years unless exploitation of northern pikeminnow was increased to 130% or more of mean 1994-96 levels. Even with a sustained 130% increase, losses were not mitigated for approximately 10 years. Losses would likely never be mitigated if the program was discontinued in alternate years.

ISRP Comment/Question: The recruitment relationship for squawfish should also be determined and the size of fish for which rewards are offered should be tied directly to this recruitment (growth rate and size at age) relationship.

Response: The size at which fish become eligible for reward payment is directly related to the size at which they begin consuming juvenile salmonids. Although a sliding scale based on fish size is not in place, numerous contests are held to provide extra incentive for large fish.

ISRP Comment/Question: A minor suggestion is that “In Press” MS references did not indicate the journals that had accepted the work. Citations should include this information.

Response: This information is clearly presented in the References section of the proposal.

ISRP Comment/Question: A concern about current work is whether the investigators are continuing to do verification on the captured pikeminnows to confirm assumptions of predation rates on salmon.

Response: The proposal clearly states that direct monitoring of program effects on predation, through collection of data on predation by and population dynamics of northern pikeminnow and other resident predators, will be conducted every three years.

ISRP Comment/Question: The project is evaluated under the Implementation and Management criteria but two notable rating criteria were not addressed in the proposal: alternative approaches and their evaluation. Why should BPA fund the project? Given the cost of this program, both of these criteria are reasonable questions.

Response: As stated in the proposal, many approaches to predator removal were evaluated from 1990-94, such as fyke traps, purse seines, commercial fishers, and others. None proved feasible other than the approaches currently being used. As stated above, other approaches such as suspending the program in alternate years have been evaluated and deemed ineffective. The proposal clearly demonstrates the link between increased predation by northern pikeminnow and the hydrosystem. Given this link, it is appropriate for BPA to fund the project.

**Project: 9007800 Evaluate Predator Removal: Large-Scale Patterns**
Sponsor: U.S. Geological Survey

CBFWA tier: 1

ISRP review: Do not fund as a separate program, the project should be incorporated as an integral part of Northern Pikeminnow Management Program, 9007700.

ISRP Comment/Question: Earlier work resulted in very useful results. However, there appears to be potential for diminishing returns and it is unclear what direct benefits may result for fish and wildlife. For example, if higher water temperature in the lower river is in fact found to be the most likely explanation for the larger size of squawfish and higher predation rates on salmon, this will be interesting.

Response: The project sponsor believes that there are many specific benefits, and these were listed in the proposal (pages 10, 13, and elsewhere). Recognition and verification of large-scale patterns in predation might be managed through several means. Adjustments of the ongoing Northern Pikeminnow Management Program is one example. If a very high proportion of predation is occurring downriver, for example, why not increase the bounty in that area in an effort to increase downriver predator removal? This is how adaptive management should work. Another example concerns the potential importance of American shad in the diet of predators. Effects of American shad might be managed through fishery regulations or by limiting adult passage at some dams. The project sponsor agrees that management of temperature, if it proved to be the primary mechanism regulating growth, size, and predatory effect, might be very difficult; however, the EPA and the NWPPC have been very concerned with mainstem temperatures over the last few years, and it is the opinon of the sponsor that temperature cannot be as easily discarded as a potential management option as the ISRP review suggests.

ISRP Comment/Question: The BPA cost appears high for objectives 1 and 2, and no funds appear allocated for objective 3.

Response: There was a mistake in the proposal. Allocation of funds among the objectives would be: Objective 1, 20%; Objective 2, 40%; and Objective 3, 40%.

**Project: 9009200 Wanaket Wildlife Mitigation Project Operations & Maintenance**
Sponsor: Confederated Tribes of the Umatilla Indian Reservation

CBFWA tier: 1
ISRP review: Fund for one year. Subsequent funding contingent on a better description of monitoring and restoration objectives and methods.

ISRP Comment/Question: Fund for one year. Subsequent funding contingent on a better description of monitoring and restoration objectives and methods.

Response: It appears that the ISRP did not receive a copy of a supplemental document, which was prepared April 14, 1999, and presented to CBFWA. The document described project-monitoring activities in greater detail and will be provided to NPPC under separate cover.

**Project: 9101901 Flathead Lake Monitoring And Habitat Enhancement**
Sponsor: Confederated Salish and Kootenai Tribes

CBFWA tier: 1
ISRP review: Fund in part, for one year. The objective to quantify the trophic level (University of Montana) is not sufficiently described to justify funding at $35K. The set of Flathead proposals needs a comprehensive review by independent scientists, via a visiting committee. The ISRP suggests that funding for the trophic-level objective be deferred until the suggested comprehensive review can be conducted, and that interim funding continue at the current level. The project would be a likely candidate for multi-year review cycle if the proposal included a better description of habitat to be recovered and had biologically measurable objectives.

ISRP Comments/Question: The set of Flathead proposals needs a comprehensive review by independent scientists, via a visiting committee.

Response: Scientific review of this project and all others in the Program is welcome. Unfortunately, the review process does not allow fair and meaningful analysis. It is difficult to convey sufficient detail in a 10-page proposal (where only one page addresses the research component) for critical review. The ISRP recommended a comprehensive review by a visiting committee, which is supported by the project sponsor. This should alleviate some of the misconceptions that arise during proposal reviews.

ISRP Comments/Question: Fund in part, for one year. The objective to quantify the trophic level (University of Montana) is not sufficiently described to justify funding at $35K. The ISRP suggests that funding for the trophic-level objective be deferred until the suggested comprehensive review can be conducted, and that interim funding continue at the current level.

Response: The research objective was not sufficiently described. The proposal format does not allow lengthy description, especially of a single component of a larger project. This insuf-ficiency cannot be corrected here, but a copy of the research proposal will be submitted to the Power Planning Council so that they will have the complete information that the ISRP found lacking. Deferring funding is appropriate because of the immediate influence of this research on the nature and design of mitigation. In fact, the research is a prerequisite to mitigation, which echoes prior review by the ISRP.

Continuation of this research will improve the quality of mitigation and prevent losses of investments like those that resulted from the kokanee reintroduction experiment. The need for the research comes from the fact that the Flathead Lake food web has changed radically with the introduction of *Mysis*. Species shifts and increases in piscivorous lake trout have complicated the efforts by the management agencies to effectively mitigate fisheries losses from hydroelectric impacts. The kokanee reintroduction experiment was a casualty of these shifts and illustrated our incomplete knowledge of the food web changes. This research is designed to quantify production of zooplankton and *Mysis* and determine if resources or predation control *Mysis* abundance. Effective mitigation of fisheries impacts or determination of indirect effects of mitigation cannot occur without first determining what controls *Mysis* abundance, because *Mysis* appears to structure the fish community. Intervention with mitigation must be consistent with these biological limitations of the system.

The ISRP has a very difficult job to review projects that they have never seen, and are only briefly described in a proposal. The numerous contradictions in the ISRP comments clearly show their recommendation against immediate funding results from the insufficient description of the research, and therefore is not a result of a difference of opinion with the ISRP. Examples of the contradictions are the following endorsements of the research while recommending against immediate funding: 1) The trophic research we proposed was presented last year as an independent proposal by the University of Montana (UM) and the ISRP rated it very highly; 2) We reduced the scope of the proposed research and incorporated it as a subcontract to UM in our proposal this year; 3) In all years that the ISRP has reviewed this project they recommended that additional research be done on trophic interactions as limiting factors in the system; 4) In this current review the ISRP stated that “the lake trout-*Mysis* complex may be such a strong factor that this part of the food web will predominate and that habitat-based management will be ineffectual in restoring native fishes”; and 5) “subcontracting to the University of Montana is a good move.”

Because of the importance of this research we initiated it under different funding with work beginning in 1998. Preliminary results of that research are that zooplankton production during summer months exceeds the energetic demands of *Mysis* suggesting that *Mysis* abundance is more likely controlled by predation rather than available resources. These results are based on a small sample of Flathead Lake and require more intensive sampling to confirm results. This request for BPA funding is for additional support above current funding so the research can be continued and expanded to the level adequate for conclusive results.

ISRP Comments/Question: Objective 1 (monitor abundances of bull trout and cutthroat trout): What about the effects of the lake trout-*Mysis* complex? The point is that the lake trout-*Mysis* complex may be such a strong factor that this part of the food web will predominate and that habitat-based management will be ineffectual in restoring native fishes.

Response: The ISRP questions our restoration strategies for native fish. They raise valid considerations, but they are not relevant to this objective. This is simply a monitoring objective that established a baseline and provides feedback on the effectiveness of the restoration strategies we employ. The ISRP also questions the method employed. In the

spring series conducted under this objective we employ nets in the same locations annually with the sites distributed around the lake in an even pattern that is not randomly selected. A random selection is desirable, but only if the sample size is adequate. Also, this series established a long record that is too valuable to modify. A separate series that is randomly selected with a stratified random design and large sample size has also been instituted.

ISRP Comments/Question: Objective 2: At least 3 habitat metrics are not independent measures of habitat restoration. These are (a) area of riparian vegetation planted, (b) miles of fencing installed, and (c) linear distance of stream channel reconstructed. These are not responses by the stream, but human interventions. The biotic measures are fine.

Response: The project sponsor agrees that three of the habitat metrics listed are not independent measures. This does not affect the objective, but for accuracy's sake they will be listed correctly in future proposals. There is not a formal process to decide between active and passive restoration. Methods have been chosen by judgment based on cost, estimated effectiveness, and landowner support for each strategy.

ISRP Comments/Question: Objective 3: Obtaining baseline information useful for measuring the predation effects of lake trout using the Wisconsin model is a good do-able objective. Weights at age/size class is a missing metric in the list of parameters.

Response: The weight at age metric is being collected, although it was not listed under the objective. This can be listed in future proposals.

ISRP Comments/Question: Objective 4 came out of the blue. It does not appear to be connected to anything. Only by reading other proposals do reviewers realize this has to do with diverting fishing pressure away from Flathead Lake.

Response: The ISRP did not find fault with this objective, but only expressed confusion as to the history of establishment of the objective. This, again, is a problem with the brief proposal format that does not allow complete description of each objective.

**Project: 9101903 Hungry Horse Mitigation - Watershed Restoration & Monitoring (MFWP Umbrella**
Sponsor: Montana Department of Fish, Wildlife and Parks

CBFWA tier: 1
ISRP review: Fund. The project would be more attractive for multi-year review cycle if it were consistent with regional goals by shifting hatchery plantings to native species such as local stocks of cutthroat.

ISRP Comments/Question: Fund. The project would be more attractive for multi-year review cycle if it were consistent with regional goals by shifting hatchery plantings to native species such as local stocks of cutthroat.

Response: In general, the project sponsors agree with focusing the efforts on native species where possible. However, they look at the system as multifaceted. In areas that contain only native species, or could be restored to native species assemblages, locally compatible native strains will be used in their limited hatchery program. In fact, they have seldom used hatchery fish (M012 westslope cutthroat brood stock derived mainly from pure strain wild stocks from Hungry Horse reservoir tributaries) in these areas except for small, controlled experiments. Recently, development of the Sekokini Springs Natural Rearing Facility began (that has been complemented as a model recovery/ restoration hatchery, although there is only a small hatchery building at the site). When completed, this site will combine natural spawning habitat and small outdoor rearing habitats designed to protect the wild behavioral traits, genetic integrity and disease protection (designated disease free) of up to four local strains of westslope cutthroat trout. Cost-shares for this rearing facility have already been formalized with the Bureau of Reclamation, U.S. Forest Service, U.S. Fish and Wildlife Service, the State of Montana and BPA. Pursuit of other partnerships with local groups and educational facilities is under way. This small-scaled, low-density facility will become an important tool for re-establishing wild runs of westslope cutthroat trout in the Flathead Watershed. A peer reviews of this site during the formative stage and afterwards is welcome.

Other parts of the Flathead Watershed contain naturalized stocks of non-native fish species that in many cases are too well established to restore to a native species assemblage. In these areas, native species are encouraged and attempts are made to reduce negative interactions with nonnative species. Offsite, closed basin lakes can be restored as genetic reserves, or where natural reproduction is not possible, popular sports fisheries can be established. In the latter, non-native rainbow trout have been used to support a fishery to direct angler harvest away from critical recovery areas and reduce demands on our limited source of hatchery cutthroat. This distinction was overlooked by the ISRP review.

Unfortunately, non-native species will likely continue to be a component of mitigation due to the inability of native species to provide high yield consumptive fisheries for anglers in the area. Westslope cutthroat in much of the drainage are regulated by a mandatory catch and release regulation due to their reduced numbers. Bull trout fishing has been banned statewide except in Swan Lake, where the limit has been set at one fish per day. The consumptive fishery argument can be made for off-site mitigation as well, because the critical habitat needed for native species has been degraded. Furthermore, habitat types required by native species can not support high use/ high yield fish populations that area anglers are demanding.

ISRP Comments/Question: It is very difficult to determine from the proposal the relative priorities, and their rationale, of the various projects, and how effective they have been (a criticism last year, too).

Response: This statement is a symptom of the proposal size limitation and the project sponsor's inability to attach the long-term Mitigation and Implementation plans and supporting literature. The relative priority of the various projects, the structure for evaluating and prioritizing new projects and the success of specific actions can be found in these documents, so for brevity were only mentioned in the proposal.

ISRP Comments/Question: It is also nearly impossible to make such judgments in the format of an annual review. The best mechanism for accomplishing a thorough review, as indicated in reviews of other component projects of the same umbrella, is formation of a visiting committee for simultaneous review of all of the projects.

Response: The project sponsor agrees and welcomes the opportunity for a detailed peer review of all of their projects.

ISRP Comments/Question: Following such review, and receipt by the various project teams of review comments, these projects should be invited to propose for a longer period (e.g. 3-5 years), during which annual progress reports could be submitted and assessed administratively.

Response: The managers and project sponsor agree with the ISRP. This would allow for reviewers to focus on only a subset of the many proposals each year and enable a more detailed review of the smaller number of projects.

ISRP Comments/Question: The array of methods used to assess changes in population and community structure is impressive. However, they do not provide evidence of checking for catchability and comparing efficiencies of capture by gear and technique.

Response: Efficiencies of sampling gear are widely supported in the literature and through evaluation of past successes and failures in fisheries management and research. Methods and techniques have been modified over time to maximize capture efficiency of target species. These have been continually refined as standard operating procedures in the Flathead system.

**Project: 9101904 Hungry Horse Mitigation - Nonnative Fish Removal / Hatchery Production**
Sponsor: U.S. Fish and Wildlife Service

CBFWA tier: 1
ISRP review: Fund in part. Do not fund objective 3, non-native stocking.

ISRP Comments/Question: The review group was strongly in support of those objectives that support mitigation and enhancement of native species and was philosophically opposed to mitigating the loss of native species by introduction of non-native species (i.e. rainbow trout). Indeed, this project appears to embrace contradictory actions and philosophies in that regard.

Response: These dual objectives may seem contradictory; however, that is a very simplistic view of a complicated issue. All previous and currently proposed stocking of non-natives has been heavily scrutinized and is compatible with native species recovery actions.

The ISRP comments do not appear to reflect a total understanding of the hatchery objectives (#1, #2, and #3), which are integral to the overall Hungry Horse Mitigation program objectives. The overall program objectives are to use a combination of operational and non-operational measures to replace lost annual production of 65,000 juvenile westslope cutthroat, 250,000 juvenile bull trout **and** 100,000 adult kokanee salmon, based on an NPPC accepted loss statement. Adaptive management principles are being used to restore native species **and** replace lost fisheries for non-natives, not just one or the other.

An example of this is Objective 3, to produce and stock up to 100,000 rainbow trout annually into CSKT managed waters. The ISRP recommended this objective not be funded in FY 2000. In 1999 78,000 rainbow trout were stocked into four waters (Pablo Reservoir, Dog (Rainbow) Lake, Lower Lonepine, and McDonald Pond). All four of those waters provide marginal habitat for native cutthroat due to thermal conditions, habitat limitations (water level fluctuation), and/or the presence of non-native warm water species (northern pike, yellow perch, and/or largemouth bass). None of the four waters is connected to any habitat where salmonids can reproduce. None of these waters has inlets or outlets directly connected to any waters where native species recovery actions are now taking place or have the potential to occur. Previous experience indicates that stocking of put-grow-take rainbow trout will produce an acceptable and cost-effective fishery in these waters, especially during winter through the ice. Monitoring these plants for effectiveness through angler survey and gillnet sampling occurs. Hence, Objective 3 partially meets the overall mitigation objective to replace the lost fishery for kokanee, and does so in a manner that does not jeopardize bull trout and westslope cutthroat recovery actions. **That is at the central focus of the Adaptive Management Strategy** of the Implementation Plan.

In conclusion, the project sponsor respectfully disagrees with the ISRP conclusion that the project "appears to embrace contradictory actions and philosophies." The Flathead is a large and diverse watershed containing over 300 fish-bearing lakes. There is room for a blending of approaches that allow both native and nonnative species mitigation goals to succeed.

ISRP Comments/Question: As with other projects under this umbrella, a comprehensive review of all such projects should be conducted, perhaps by a visiting committee. In the case of this particular project, where the actions proposed could have long-term consequences, it is essential that such review be conducted as soon as possible.

Response: A more intensive ISRP site review is welcomed and encouraged by the project sponsors. Please coordinate with them as far ahead as possible so that they may provide a structured presentation as they did for the previous SRG review in June of 1994.

**Project: 9102900 Life History And Survival Of Fall Chinook Salmon In Columbia River Basin**
Sponsor: U.S. Geological Survey, Biological Resources Division

CBFWA tier: 1
ISRP review: Fund in part, do not expand into objectives 6 and 7 until they have reported on previous results from Snake River basin research. Objective 6 and 7 should be developed as independent proposals with specific rationale, hypotheses, and study design.

ISRP Comment/Question: Fund in part, do not expand into objectives 6 and 7 until they have reported on previous results from Snake River basin research.

Response: All reports for the project have been submitted and there are no other reports due. Annual Reports to BPA have been produced for the following years: 1991, 1992, 1993, 1994, 1995, and 1996-97. A report for 1998 is in preparation and is due in October 1999. Research results have also been reported in separate reports to BPA (Connor et al 1997; Connor et al. 1998; Muir et al 1998; Muir et al. 1999; Smith et al. 1997). In addition, the managers have

published four peer-reviewed journal articles and four are in the review process, which are listed below. The authors in bold have contributed to the project.

**Connor, W.P., H.L. Burge**, and D.H. Bennett. 1998. Detection of PIT-tagged subyearling chinook salmon at a Snake River dam: Implications for summer flow augmentation. North American Journal of Fisheries Management 18:530-536.

Groves, P. A and **A.P. Garcia**. 1998. Two carriers used to suspend an underwater video camera from a boat. North American Journal of Fisheries Management 18:1004-1007.

Dauble, D.D., R.L. Johnson, and **A.P. Garcia**. In Press. Fall chinook salmon spawning downstream of lower Snake River hydroelectric projects. Transactions of the American Fisheries Society.

**Venditti, D.A., D.W. Rondorf, and J.M. Kraut**. Accepted. Migratory behavior and forebay delay of radio-tagged juvenile fall chinook salmon in a lower Snake River impoundment. North American Journal of Fisheries Management.

**Connor, W.P.**, K. Steinhorst, and **H.L. Burge**. In Review. Passage of subyearling chinook salmon at a Snake River dam. North American Journal of Fisheries Management.

Marshall, A.R., H.L. Blankenship, and **W.P. Connor**. In Review. Identifying genetic race of Snake River juvenile chinook salmon and genetic characterization of the Snake River natural fall race population. Transactions of the American Fisheries Society.

**Tiffan, K.F., D.W. Rondorf**, and P.G. Wagner. In Review. Physiological development and migratory behavior of subyearling fall chinook salmon in the Columbia River. North American Journal of Fisheries Management.

**Tiffan, K.F., D.W. Rondorf, R.D. Garland,** and P.A.Verhey. In Internal Review. Morphological differences between juvenile fall and spring chinook salmon migrating through the lower Snake River. Transactions of the American Fisheries Society.

Additional products:
Snake River fall chinook salmon outmigration: This project also reports, in real time (weekly basis) on the juvenile Snake River fall chinook outmigration to the Fish Passage Advisory Committee (e.g. FPAC agenda for July 20, 1999). This information is used for summer flow management decisions.

Lidar/SHOALS survey of Hanford Reach: We took the lead in initiating the Lidar/SHOALS survey of the Hanford Reach (Objective 7), and provided bathymetric data to WDFW which was critical to their BPA-funded stranding analysis of juvenile fall chinook salmon.

Fish and Wildlife Coordination Act Report: A juvenile fall chinook salmon habitat model developed by this project was used to predict the amount of rearing habitat that would occur if the lower Snake River was drawn down. This information was used in the Fish and Wildlife Coordination Act Report to the U.S. Army Corps of Engineers (USFWS, September 1998).

ISRP Comment/Question: Objective 6 and 7 should be developed as independent proposals with specific rationale, hypotheses, and study design.

Response: Objective 6. The objective on estimating survival of juvenile fall chinook salmon has been a part of this study since 1991 as stated in Task 4.3 of our 1991 Statement of Work, “Estimate survival rate of subyearling chinook salmon through river reaches.” We have completed a study to estimate juvenile-to-adult survival below McNary Dam (Tiffan et al., In Review). In the Snake River, the managers have estimated survival for hatchery release groups to determine the effect of size on release (Muir and coauthors including Connor, 1998, 1999). Until this time it was not consider feasible to estimate survival of juvenile fall chinook salmon from the Hanford Reach, due to technological constraints. The sponsors have included this objective because they now believe it is possible to obtain reliable estimates of survival for these fish to compliment estimates from naturally produced fall chinook

salmon in the Hells Canyon Reach. A comparison of the life history timing and survival of juvenile fall chinook salmon in the Hanford and Hells Canyon reaches (Objective 6) might help to explain the marked differences in abundance between the two populations. The FY2000 proposal rated very highly during the CBFWA review. This high ranking suggests that the biologists who evaluated Objective 6 did not feel a new proposal was necessary. Resubmitting Objective 6 as an independent proposal would disrupt the continuity of the research which the managers have steadily built upon and improved since 1991.

Objective 7. This objective was in both the FY1998 and FY1999 BPA proposals and received a favorable review by the ISRP. Work has already been conducted on this objective. Not funding this objective, as suggested, will leave this objective half finished. Consequently, information on the Hells Canyon Reach, which is a critical rearing area for ESA-listed Snake River fall chinook salmon will go unreported

ISRP Comment/Question: The proposed project is very large and ambitious, both in terms of scope and schedule for delivery. Overall, this is an enormous effort (approximately $7.5x10^6 in previous funding) with far too many different and specific objectives for any individual reviewer to provide much overall perspective. It is doubtful that all the objectives can be successfully accomplished with the requested resources.

Response: While it is true that there are many objectives and tasks, the reviewers failed to recognize that Objectives 2-5 are nearly complete and represent only 15% of the project budget to complete reporting and publication. The main objectives that will be addressed in FY2000 are 1, 6, and 7, and the managers believe that these can be accomplished with the resources requested.

ISRP Comment/Question: The objectives of this proposal are clearly described, but it not clear what should actually be done next due to the large backlog of data and insufficient reporting of previous work.

Response: This comment may have been made because in the proposal the managers stated that Objectives 2, 3, and 5 were “completed except for analysis.” As mentioned in the previous response, the effort required to complete reporting for these objectives is small. In fact, the statement as to the status of these objectives was hoped to communicate that this project was making progress toward completing its proposed work. The managers would also like to emphasize that the majority of the data collected is readily available to the fisheries community. For example, the PIT-tag data were invaluable during the recent PATH analyses, and are used annually when planning summer flow augmentation.

ISRP Comment/Question: The reviewers were also uncertain about what was meant by the use of “Assumptions”.

Response: The proposal instructions asked for assumptions that were being made regarding the stated hypotheses. With all due respect, the managers feel that the ISRP missed the mark here. The managers followed the proposal instructions when stating the assumptions.

ISRP Comment/Question: They also questioned the value of using the time of tagging (page #1003) as a variable to study survival, migration timing, or relation to environmental variables. What is the evidence that time of tagging is an informative variable and what can be inferred from time of tagging?

Response: Release date (time if tagging) of wild fish PIT tagged in the Snake River is representative of life history timing. There is evidence that juvenile fall chinook salmon which emerge, rear, and migrate seaward early have higher survival to the tail race of Lower Granite dam than fish with later life histories (Connor and Bjornn 1999). The time of tagging variable is necessary because of the protracted emergence of fall chinook salmon. Sequential tagging over time is therefore necessary to obtain a representative sample from the entire population. The products delivered to the fishery agencies and tribes each year are emergence timing estimates and in-season migration timing of Snake River fall chinook salmon at Lower Granite Dam.

References:

Connor, W. P. and several co-authors. 1997. Post release attributes and survival of natural and Lyons Ferry Hatchery subyearling fall chinook salmon released in the Snake River. Chapter 2 in J. G. Williams and T. C. Bjornn, editors. Fall chinook salmon survival and supplementation studies in the Snake and Lower Snake River Reservoirs, 1995. Annual report to the Bonneville Power Administration.

Connor, W. P. and several coauthors. 1998. Early life history and survival of naturally produced subyearling fall chinook salmon in the Snake River in 1996. Chapter 1 in J. G. Williams and T. C. Bjornn, editors. Fall chinook salmon survival and supplementation studies in the Snake and Lower Snake River Reservoirs, 1996. Annual report to the Bonneville Power Administration.

Connor, W. P. and T. C. Bjornn. 1999. Subyearling chinook salmon early life history and survival in the Snake River. A paper presented at the 1999 Annual meeting of the Western Division of the American Fisheries society, Moscow, Idaho.

Muir, W.D. and several coauthors (including Connor). 1998. Passage survival of natural and hatchery subyearling fall chinook salmon to Lower Granite, Little Goose, and Lower Monumental dams. Chapter 2 in J. G. Williams and T. C. Bjornn, editors. Fall chinook salmon survival and supplementation studies in the Snake and Lower Snake River Reservoirs, 1996. Annual report to the Bonneville Power Administration.

Muir, W.D. and several coauthors (including Connor). 1999. Passage survival of natural and hatchery subyearling fall chinook salmon to Lower Granite, Little Goose, and Lower Monumental dams. Chapter 2 in J. G. Williams and T. C. Bjornn, editors. Fall chinook salmon survival and supplementation studies in the Snake and Lower Snake River Reservoirs, 1997. Annual report to the Bonneville Power Administration.

Smith, S. G., and several coauthors (including Connor). 1997. Passage survival of natural and hatchery subyearling fall chinook salmon to Lower Granite, Little Goose, and Lower Monumental dams. Chapter 1 in J. G. Williams and T. C. Bjornn, editors. Fall chinook salmon survival and supplementation studies in the Snake and Lower Snake River Reservoirs, 1995. Annual report to the Bonneville Power Administration.

**Project: 9106000 Pend Oreille Wetlands Wildlife Mitigation Project - Kalispel**
Sponsor: Kalispel Tribe of Indians

CBFWA tier: 1
ISRP review: Fund for one year. Subsequent funding contingent on provision of results. This proposal may have been adequate for multi-year review cycle if they had provided a better description of results to date.

ISRP Comment/Question: This proposal may have been adequate for multi-year review cycle if they had provided a better description of results to date.

Response: The ISRP actually stated that "there have been good accomplishments since 1991" within the comments from the same document.

ISRP Comment/Question: A drawback of this proposal is that it does not consider potential conflicts of obtaining project objectives with fisheries mitigation projects in the area.

Response: The adaptive management approach of this project does take into account the implications of the project actions upon the fisheries associated with the project location. All efforts are again coordinated with the fisheries managers for project actions. Specific examples include the use of two sloughs on the project to rear bass fry and the use of wetland effluent to provide flows to potential brown trout spawning habitat. This project does account for interactions to fisheries projects within the Pend Oreille River Basin.

ISRP Comment/Question: The primary shortcoming of the proposal is the failure to provide data on the target species using the site.

Response: In 1994 the Kalispel Tribe submitted to BPA a list of species occurring on the project and their relative abundance. This list includes all seven target species used in the loss assessment HEP for Albeni Falls Dam. The only species found to be in low abundance on the property was the Yellow Warbler. All other species were moderately common on the project.

ISRP Comment/Question: After over 7 years, it is poor to say they still do not have a management plan.

Response: Management plans for the two property's were completed (Merker, 1993 and Entz, unpublished) and are being implemented annually under the NWPPC Fish and Wildlife Program. These management plans are referred to on page 11 of the project proposal.

ISRP Comment/Question: What's the plan here for M&E? It is pretty far into the project to be presenting so little monitoring and evaluation information.

Response: M&E are critical components of this project. In order to successfully implement an adaptive management approach, M&E must be a feature of project implementation. Currently M&E have been used at a habitat level to assist in project implementation. Monitoring of target and other species response to habitat enhancement and restoration activities may not be measurable for several generations. The effect of the habitat enhancements is being monitored by the use of breeding bird surveys, since avian response to habitat manipulation is generally rapid. In 1999, the second breeding bird survey was completed and that data will be compared to baseline and future surveys to help determine if target and other species are responding to the availability of restored and enhanced habitats within the project.

Additional M&E methods are being worked out on a regional basis through the CBFWA Wildlife Caucus. These M&E tools will be added to existing project level methods to better manage this project over the long-term.

ISRP Comment/Question: What are the milestones?

Response: Project milestones will be measured in two ways; 1) once the project is completed it is estimated that 360 HU's as baseline will have been protected and have enhanced an additional 617 HU's through enhancements (referenced on page 8 of project proposal) and 2) using M&E it is expected that species response will be related to the gains in habitat quantity and quality (referenced on pages 11-12 of project proposal).

References:

Merker, C. 1993. Kalispel Tribe of Indians wildlife mitigation and restoration for Albeni Falls Dam: flying goose ranch phase I. DE-BI79-91BP20287, Bonneville Power Administration, Portland, Oregon.

Entz, R. (1998) – Site specific management plan for the 164-acre "Dilling addition." (unpublished).

**Project: 9106100 Swanson Lakes Wildlife Area**
Sponsor: Washington Department of Fish and Wildlife

CBFWA tier: 1
ISRP review: Delay funding until proposers report biologically measurable results-to-date in relationship to benefits to the target species and develop biologically measurable objectives for sharp-tailed grouse.

ISRP Comment/Question: Delay funding until proposers report biologically measurable results-to-date in relationship to benefits to the target species and develop biologically measurable objectives for sharp-tailed grouse.

Response: Based upon its status as an ongoing project with HEP and management plans completed, the Caucus approved this project for continued funding.

ISRP Comment/Question: How does this activity fit into the overall picture for sharp-tailed grouse?

Response: WDFW has identified four sharp-tailed grouse management zones for Washington State. SLWA is within Sharp-tailed Grouse Management Zone Four, which includes portions of Lincoln, Spokane, Whitman, and Grant Counties. The majority of Management Zone Four occurs in Lincoln County where the SLWA is located.

All enhancement and monitoring activities support SLWA management objectives and WDFW's management goal for the Swanson Lakes Wildlife Area. To reiterate, the management goal at SLWA is to establish and maintain a self sustaining sharp-tailed grouse population of at least 400 birds. Management objectives address specific HEP based limiting habitat factors such as poor nesting habitat quality and quantity resulting from livestock grazing, farming, competition from exotic vegetation, and the lack of winter habitat. Monitoring activities are designed to assess how habitat is responding to management actions and how sharp-tailed grouse and other wildlife species are responding to habitat changes resulting from enhancement, protection, and maintenance measures.

ISRP Comment/Question: How this project fits in with a comprehensive plan to protect sharp-tailed grouse was never made clear. The ESA status and placement of the Swanson Lakes site in relation to the range of the species (periphery? core?) was not made clear.

Response: Columbian Sharp-tailed grouse are a State Threatened species and a Federal Species of Concern. SLWA is the core area within WDFW's Sharp-tailed Grouse Management Zone Four. Swanson Lakes WA is the area within Lincoln County currently occupied by sharp-tailed grouse.

ISRP Comment/Question: This may be an important wildlife project, but the proposal does not adequately describe benefits to wildlife.

Response: The largest benefit to wildlife provided by SLWA is protection of the meta sharp-tailed grouse population occurring within Sharp-tailed Grouse Zone Four. More than 95 percent of the sharp-tails known to exist in Management Zone Four reside within 16 kilometers (10 miles) of SLWA and the vast majority of these birds are present on SLWA for a significant portion of the year. Neo-tropical birds, raptors, shore birds, waterfowl, sage grouse, sage sparrows, sage thrashers, burrowing owls, mule deer, jack rabbits, and a host of other species benefit significantly from the project.

ISRP Comment/Question: The proposal should identify species-related objectives.

Response: WDFW's state-wide objective is to increase the sharp-tailed grouse breeding population from an estimated 380 birds to more than 2,000[1]. The objective for Management Zone Four is to increase the sharp-tailed grouse breeding population to greater than 800 grouse. Likewise, the specific objective for SLWA is to increase the breeding population from approximately 184 birds to at least 400 sharp-tails.

ISRP Comment/Question: The group would like to have seen information on the carrying capacity of the habitat.

Response: WDFW research biologists believe SLWA can support a population of 400 to 500 sharp-tails with additional habitat enhancements, habitat protection, and perpetual Operations and Maintenance (O&M) funding.

ISRP Comment/Question: The fire protection element of the proposal needs to be better described; it may be counter to the biological needs of the grouse.

Response: As a responsible landowner in Lincoln County, WDFW must maintain fire suppression contracts with local fire districts for the following four reasons: to protect critical habitats located on the Wildlife Area from wildfires originating on SLWA, to protect SLWA from wildfires originating on adjacent private lands, to fulfill WDFW's legally mandated obligation to provide fire protection in order to protect adjoining private lands from fires originating on project lands (WDFW is responsible for damage caused by fires originating on lands owned by the Agency), and to generate local "goodwill" towards the project.

This is not to suggest that fire isn't an appropriate tool for habitat manipulation. SLWA managers may use prescribed burns to reduce shrub cover and improve stands of herbaceous vegetation on specific areas. Prior to using fire or any other habitat manipulation tool, consideration will be given to the biological needs of other shrub-steppe

obligate species such as sage grouse, burrowing owls, and sage thrashers that may be impacted by the activity. Management conflicts will be resolved prior to initiating habitat manipulation practices.

ISRP Comment/Question: The proposal has an especially good background section, except that the reasoning is not clear for using Grand Coulee mitigation when the main decline in habitat for the target bird species is for other reasons.

Response: Although it is true that recent declines in sharp-tail grouse numbers near the SLWA occurred largely due to agricultural practices, critical sharp-tail grouse wintering habitat was lost as a result of the construction of Coulee Dam as well as from the creation of Lake Roosevelt behind the Dam. Studies in Washington suggest that sharp-tailed grouse will travel 9.7 km (5.8 mi) to winter cover/food.[2] Moreover, research conducted in other States indicate that sharp-tails will travel even greater distances between nesting and wintering areas. Potentially, the loss of critical winter habitat impacted sharp-tails from a large area adjacent to what is now Lake Roosevelt.

Little if any opportunity exists to acquire, develop, and/or protect sharp-tailed grouse habitat near Lake Roosevelt at this juncture. Swanson Lakes is only 17.6 km (11 mi) south of the reservoir-easily within reach of a determined grouse. This relatively close distance would have historically allowed birds to move from one area to another. This is not the case today.

Loss of genetic diversity must also be considered. As sharp-tail populations near the reservoir were extirpated, genetic diversity also declined. Historically, it is very likely that sharp-tails wintering along the Columbia River co-mingled with the grouse population found at what is now known as the SLWA. The loss of genetic diversity may be partially responsible for the slow growth response in the meta population occupying the SLWA. In summary, the loss of sharp-tailed grouse habitat on and adjacent to Lake Roosevelt likely directly impacted grouse at SLWA.

ISRP Comment/Question: The project purpose is stated to involve land purchase and habitat management for wildlife, especially sharp-tailed grouse. However, the objective statements seem poor for the relatively high cost of the project. This is O&M for wildlife area mitigation for Grand Coulee dam, to be managed for the recovery of sharp-tailed grouse. Objectives are presented, but all are tasks.

Response: WDFW's primary management goal for the Swanson Lakes Wildlife Area is to establish and maintain a self sustaining sharp-tailed grouse population within WDFW's Sharp-tailed Grouse Management Zone Four. Biologists estimate that a minimum of 8,094 ha (20,000 ac) of contiguous habitat must be protected (best protected through acquisition), enhanced, and maintained in perpetuity in order to achieve this goal. Swanson Lakes encompasses approximately 7,689 ha (19,000 ac). SLWA is adjacent to 5,666 ha (14,000 ac) of land owned by the Bureau of Land Management (BLM). Together, 13,760 ha (34,000 ac) are currently being managed for sharp-tailed grouse and other shrub-steppe obligate species. As a result, WDFW's protection (acquisition) goal has largely been met at SLWA (additional critical habitat, however, may be acquired as funding and the opportunity presents itself).

WDFW is currently engaged in enhancement and O&M activities on lands purchased for the protection of sharp-tailed grouse at SLWA. SLWA's primary management objectives include the following:

Increase the amount of sharp-tailed grouse nesting habitat at SLWA by converting 243 ha (600 ac) of small grain cropland to native-like grassland by the end of FY 1998. This enhancement has been accomplished. Requires annual O&M such as weed control and spot reseeding.

Increase sharp-tailed grouse winter food quantities by planting 17,000 shrubs and trees (3 ha / 7ac) throughout SLWA not later than FY 1998, and by maintaining 16 ha (40 ac) of small grain food plots annually while shrubs and trees become established. Both enhancements have been accomplished. Shrub and tree plantings require annual O&M including weed control and replanting dead stock. Small food plots must be seeded and maintained each year.

Protect 7,689 ha (19,000 ac) of shrub-steppe habitat from livestock/vehicle trespass by constructing 82 kilometers (51 mi) of new fence and over hauling an additional 27 kilometers (17 mi) of existing fence by the end of FY 1999. To date, 78 kilometers (49 mi) of new fence has been built and 27 kilometers (17 mi) of existing fence has been repaired. Fences must be maintained annually in order to adequately protect existing habitat values.

Control invasive noxious weeds throughout the project site on an annual basis. Weed infestations at SLWA are at low levels by county standards. This has been accomplished due to the vigilance and weed control activities of the previous landowner and through aggressive weed control efforts by SLWA staff. Even so, new weed species such as spotted knapweed, Dalmation and yellow toadflax, and St. John's wort have been found and subsequently controlled. To be successful in the future, aggressive weed control activities must be accomplished annually throughout the entire wildlife area for the life of the project. Weed control is a labor-intensive activity in shrub-steppe habitats.

Monitor sharp-tailed grouse populations and habitat response to enhancement, protection, and O&M measures. Sharp-tailed grouse lek (breeding display sites) counts have been conducted in the SLWA area continuously since the early 70s. Approximately 338 grouse were observed on leks located on or near SLWA from1984 through 1991 (pre-project) and 532 sharp-tails were observed from 1992 through 1999 (post project). The increase may be due, in part, to additional monitoring efforts by SLWA staff, but also to establishment of new leks by sharp-tailed grouse as populations improved or immigrated to the SLWA from the surrounding landscape. Although below WDFW's target population of 400 grouse for the SLWA, population estimates for 1997, 1998, and 1999 are 176, 155, and 184 birds respectively[3]. WDFW is cautiously optimistic that the population is stable and moving toward the stated population goal. Radio tracking of sharp-tails is also taking place in order to secure habitat use information.

Generally, habitat responds slowly in xeric (dry) shrub-steppe areas without the aid of irrigation. As a result, habitat monitoring is just now being put into place and will commence in earnest in FY2000 (three permanent vegetation transects were established in 1998). Both HEP and plant community based habitat models and photo plots are used to monitor enhancement, protection, and O&M activities. Enhancements and maintenance activities will be monitored, in some cases, annually while specific HEP surveys will be replicated in FY 2000 and at five-year intervals thereafter.

ISRP Comment/Question: Very little detail is presented about the specific activities to enhance and monitor

Response: Specific activities to meet SLWA objectives have been described here. SLWA staff and/or contractors accomplished all activities. Long term O&M measures will be the sole responsibility of SLWA staff.

ISRP Comment/Question: All is to be done in the future.

Response: As stated previously, most enhancement activities have been accomplished. Habitat monitoring has been initiated; however, due to semi-arid growing conditions it is too soon to expect large quantifiable results. Monitoring sharp-tailed grouse lek sites has occurred for more than 20 years and will continue each year in the future. In addition, big game counts are being conducted annually on the area as are Neo-tropical bird transects, burrowing owl surveys, waterfowl surveys/banding projects, and rare plant surveys.

ISRP Comment/Question: The proposal needs to be put into perspective about what is being done, what needs to be done, what progress is being made, and how.

Response: What progress has been made is described above. Again, most objectives have been initiated and/or accomplished. At present, SLWA staff has shifted emphasis from enhancement to O&M and monitoring activities. Future activities include increased weed control and fence maintenance, small enhancements, acquisition of inholdings, and increased habitat/species response monitoring. Activities will be accomplished based on the best available science and latest technical methodologies.

ISRP Comment/Question: The budget, however, seems to be extremely lopsided to salaries with little or no direct ties to specific tasks. Thus, one cannot objectively assess whether the budget is appropriate or excessive.

Response: The budget is appropriate because most objectives at this juncture require little equipment/material support, but do require staff to perform the activities that support the management objectives including O&M. For example, weed control spray equipment has already been purchased. Therefore, only herbicides must be purchased for the foreseeable future. The project sponsor does need, however, technicians to apply the herbicide throughout the growing season. Another example is monitoring. Monitoring requires virtually no equipment, but does require staff

to collect data. This activity is very labor intensive. As a result, salary dollars will be the largest single expenditure for this project.

ISRP Comment/Question: Another drawback of the project is the small emphasis, in terms of budget, placed on monitoring.

Response: As stated previously, a large portion of the budget is for staff to accomplish tasks including monitoring and evaluation. Approximately 1.5 man months are currently used annually for monitoring activities.

ISRP Comment/Question: It is not evident that this effort will allow a reliable assessment of attaining project objectives in terms of sharp-tailed grouse abundance.

Response: Existing protocols used to monitor sharp-tailed grouse are scientifically sound and will provide a reliable species response assessment regarding whether or not grouse abundance goals are being met.

ISRP Comment/Question: There are no resumes given for staff, and no results for the target species.

Response: The SLWA is managed by a highly motivated professional staff including a Wildlife Area Biologist III, a Wildlife Biologist II and several seasonal technical positions. Biologist positions are professional positions within WDFW and require college degrees. Current staff meets and/or exceeds the qualifications for these positions. Likewise, technicians meet and/or exceed the qualifications necessary for those positions.
Target species results are described above. Population trends suggest that sharp-tails at SLWA are moving toward management goals.

References:

McDonald, M.W. 1998. Ecology of Columbia sharp-tailed grouse in Eastern Washington. Thesis, University of Idaho, Moscow, Idaho, USA.

Washington Department of Fish and Wildlife. 1995. Washington State management plan for sharp-tailed grouse. WDFW, Olympia. 99 pp.

**Project: 9106700 Idaho Water Rental: Resident Fish And Wildlife Impacts - Phase III**
Sponsor: Idaho Department of Fish and Game

CBFWA tier: 1
ISRP review: Do not fund; this proposal is not scientifically justified as sound. It addresses an important problem that deserves analysis, but the proposal does not provide an adequate framework to address the problem.

ISRP Comment/Question: Do not fund; this proposal is not scientifically justified as sound. It addresses an important problem that deserves analysis, but the proposal does not provide an adequate framework to address the problem.

Response: The general theme of the Independent Scientific Review Panel's (ISRP) criticisms of this project centers around this project being a poorly designed research project without testable hypotheses or an adequate experimental design. This project is an evaluation project, not a research project. The cause of this confusion appears to stem from the project proposal form, section 2, "ISRP Project Type." None of these listed categories accurately describes this project.

This project evaluates the water management activities (flow augmentation) by other agencies and determines the best way to release salmon flow augmentation water so resident fish populations benefit. The project sponsor (IDFG) works with the Bureau of Reclamation (BOR) and Idaho Department of Water Resources (IDWR) to find the flexibility within the system to benefit resident fish.

The purpose of the project is to evaluate and estimate the impacts of salmon flow augmentation water on resident fish populations in the Snake River basin upstream of Brownlee Reservoir and to make flow recommendations that will benefit resident fish. The main products of this project are:

1) Annual estimates of changes in habitat quantity resulting from salmon flow augmentation.
2) A preferred release scenario for the salmon flow water that considers the needs of resident fish. This scenario seeks to increase resident fish habitat during limiting time periods by using the salmon flow water to help mimic a more natural (historic) hydrograph.
3) Coordination with the water management agencies (BOR, IDWR) to insure that resident fish populations benefit from the salmon flow releases in terms of increased quantity of useable habitat at critical times.

This project takes the detailed accounting by IDWR of flow augmentation releases and uses that as the basis for estimating changes in fish habitat. The flow augmentation component (as reported by IDWR) is compared to the total flow reported by the U. S. Geological Survey (USGS). Using the habitat versus flow relationships developed from existing instream flow incremental methodology (IFIM) studies, the amount of habitat available with and without the salmon flow augmentation water is estimated. A net gain or net loss in habitat is generated depending on the species, life stage, and time of year the water is released. Flows are also compared to recommended minimum flows found in the literature to qualitatively evaluate whether or not the salmon flow augmentation water benefits resident fish. Beginning in 1999, actual flows will be compared to the preferred recommendations recently developed through this project.

ISRP Comment/Question: The objective schedule table lists no measurable biological objectives.

Response: The project sponsor erred by not identifying the biological objectives in this table. Objective 1, a biological objective, will produce:

1) Quantified estimates of changes in fish habitat (in weighted usable area) resulting from flow augmentation and,
2) Flow recommendations for the release of the salmon flow augmentation water. These recommendations will be refined as more information becomes available.

These biological objectives were listed in the "Past Accomplishments" section and were described in the text of the proposal. Biologically-based flow recommendations have also been developed for the operation of the mainstem Snake River from American Falls Dam downstream to Brownlee Pool. These recommendations had not been developed at the time the proposal was written.

ISRP Comment/Question: The results of the study to date are not clearly described.

Response: This is a somewhat confusing point. The results were summarized on page 3 of the proposal. There were space limitations within that table so it was not possible to include much detail there. The major results of the project are described in detail on pages 12 – 16 of the proposal. This section was much more detailed than the previous year's proposal in response to ISRP's 1998 comments. See also previous responses for this project.

ISRP Comment/Question: The proposal gives some informative background, but should take the approach of testing whether returning to a more natural hydrograph will significantly improve conditions.

Response: The project sponsors are testing this by collecting unregulated flow data and estimates of natural flows from the USGS and the Corps of Engineers (COE), comparing that to present operations, and identifying limiting factors (flow volume and timing). Flow augmentation releases are used to move operations to a more natural hydrograph. These recommended flows will be evaluated through the models being developed by the BOR's Snake River Resources Review Project (SR3). The SR3 project is developing a decision support system (models) that will allow water managers and others to evaluate the trade-offs or impacts of different flow scenarios on all the user groups and resources in the upper Snake River basin. Resident fish needs supplied by this project are an integral part of the models and they will protect resident fish habitat.

ISRP Comment/Question: Release strategies have been recommended but the nature of the data to date that support them is not given. How well supported are these recommendations and how effective have they been in achieving goals?

Response: The basis for the flow recommendations was two-fold. The first was an extensive search of the literature for IFIM studies, records of unregulated flow, and estimates of unregulated flow throughout the upper Snake River basin. The results yielded studies conducted by the U.S. Fish and Wildlife Service, U.S. Forest Service, Idaho Power Company, consulting firms, and IDFG. Unregulated flows came from the U. S. Army Corps of Engineers (COE) and the USGS.

The second was the collective expertise of IDFG fisheries biologists in the area affected by flow augmentation. The biologists reviewed the existing data, compared it to fish population and abundance data, and used it to develop the flow recommendations. In the absence of Instream Flow data, the biologists made recommendations based on their knowledge and expertise of the systems they manage. The recommendations became consensus biological opinions based on the best scientific data available and their knowledge of their respective waters and fish populations.

The flow recommendations developed by this project have been very effective to date in achieving the goals of this project, IDFG Fisheries Management Plan, and the information needs of water management agencies. The flow recommendations are being used by the BOR's SR3 project as the basis for measuring impacts to resident fish populations from various flow scenarios. They are also being used as the baseline for protecting resident fish populations by IDWR in their feasibility study on large-scale managed aquifer recharge.

The Payette River release is the best example of how this project has been effective and the collaborative process involved. A working group was formed to decide how to release the salmon augmentation water to help balance all of the competing needs in the basin. Agencies and individuals involved included IDFG, IDWR, BOR, Idaho Power Company, Idaho Division of Environmental Quality (IDEQ), recreation interests, and irrigators. For the last four years, they have decided on a split summer/winter release that improves water quality, fish habitat (during the critical limiting winter period, Riggin and Hansen 1992), and recreational boating while meeting the needs of irrigators and down-river salmon managers.

With this project, the foundation has been established for evaluating the flow augmentation releases, thus allowing for more timely evaluation of impacts. In addition, preferred flow regimes have been described and limiting time periods for resident fish have been identified. This project has improved communication and working relationships between fish management and water management agencies. We work with the water management agencies to collectively determine when, where, and how to release the flow augmentation water so that benefits for resident fish (increased quantity of habitat) can be realized or negative impacts can be reduced.

ISRP Comment/Question: The proposal notes information may be made available on IDFG's web site; this is a good idea, but how, specifically, will the project "enable managers to assess the trade-offs between fishes and wildlife affected by upriver reservoir releases and anadromous fish affected by flow augmentation releases"?

Response: This language was taken out of Section 2.2E.7 of the Council's Fish and Wildlife Program. This project can provide the water and fish managers from the COE, BOR, and National Marine Fisheries Service (NMFS) with the information on the impacts to selected resident fish populations so they can call for the salmon flow releases at a time that will benefit or reduce the negative impacts to resident fish.

ISRP Comment/Question: Objective 1: wouldn't you also want to assess impacts on fish in addition to impacts on their habitat? What specifically does it mean to "maximize benefits" to resident fish?

Response: Yes, the project sponsor would like to assess impacts on fish populations as well as on habitat. However, this is not practical over such a large geographic area and in such a large river. Because the fish population evaluation approach is not feasible, changes in habitat due to flow augmentation are estimated as a surrogate for population response. Assuming based on the extensive body of IFIM literature that resident fish populations will benefit from increases in the quantity of habitat and will be harmed by decreases in the quantity of habitat especially during a critical or limiting time period. The limitations of the IFIM data are taken into account in the project sponsor's evaluation.

This project is trying to determine how best to release the salmon augmentation water to get the largest gains in the quantity of usable habitat during the most critical (limiting) time period for resident fish. This is what "maximize benefits" means. If gains are not possible and reductions in the quantity of resident fish habitat are inevitable, we are attempting to make these

losses as small as possible. This all has to be done within the existing operating constraints of the irrigation/hydropower system.

The term “maximize” is vague and a poor descriptor. It will not be used in the future.

ISRP Comment/Question: The CBFWA evaluation noted that “There are no milestones listed.” and asked the question, “When is this project going to end?”

Response: Milestones should have been included in the “objective schedules and costs” table. The project sponsor thought the milestones were only for past accomplishments. The past milestones are listed on page three of the proposal under “Past Accomplishments.”

Objective 1, to “Determine impacts to resident fish habitat (in weighted usable area) resulting from salmon flow augmentation and make flow recommendations that benefit resident fish,” is an annual milestone. The impacts vary every year because the snowpack, volumes released from each reservoir, and timing of the releases varies each year.

The milestone for Objective 3 is the scheduled completion of BOR’s SR3 Project in FY2000. This will enable us to model the impacts of various flow scenarios (including salmon flow augmentation) on resident fish habitat.

The end of this project is dependent upon the upcoming NMFS 1999 decision and the role that flow augmentation plays in the long-term recovery strategy for ESA listed Snake River anadromous fish. If NMFS decides to eliminate or keep flow augmentation from the upper Snake River basin at existing levels (427,000 acre-feet), then FY 2000 may be the last year of funding. If NMFS decides to use more water from the upper Snake for flow augmentation, then it will be critical to keep this project funded at least through 2005, because the project managers will have to estimate the impacts on an entirely new flow regime. The potential for adverse impacts to resident fish and habitat is much greater with larger volumes of water used for flow augmentation, especially if resident fish needs are not considered.

ISRP Comment/Question: The ISRP concludes that the proposal is of questionable benefit to fish.

Response: The benefits to resident fish are:

1) The project sponsors have been successful in coordinating salmon flow releases in the Payette River basin so that flows and thus resident fish habitat increases during the critical winter time period and also helped balance other water needs in the basin.
2) This project has also documented quantified increases in sturgeon and adult rainbow trout habitat and decreases in juvenile and spawning rainbow trout habitat in the Snake River resulting from the flow augmentation water (Leitzinger 1996, 1997, in press).
3) The flow recommendations serve as the basis for restoring a more natural hydrograph to the upper Snake River basin through the BOR’s SR3 modeling and by IDWR in their large-scale managed aquifer recharge feasibility study. These flows have been recognized, as flows needed to protect and maintain existing fish populations in the upper Snake River basin.

This project will be even more critical if the volume of flow augmentation required from the upper Snake River basin increases in the future. The foundation and coordination are already established, and working groups are established. Flow augmentation releases will be coordinated so that resident fish needs will be addressed.

References:

Leitzinger, E. J. 1996. Idaho water rental pilot project: Probability/coordination study - resident fish and wildlife impacts. Phase III. Idaho Department of Fish and Game Annual Report to Bonneville Power Administration, Contract 93-BI02390, Project 91-067. Boise.

Leitzinger, E. J. 1997. Idaho water rental pilot project: Probability/coordination study - resident fish and wildlife impacts. Phase III. Idaho Department of Fish and Game Annual Report to Bonneville Power Administration, Contract 93-BI02390, Project 91-067. Boise.

Leitzinger, E. J. In Press. Idaho water rental pilot project: Probability/coordination study - resident fish and wildlife impacts. Phase III. Idaho Department of Fish and Game Annual Report to Bonneville Power Administration, Contract 93-BI02390, Project 91-067. Boise.

Riggin, S. H. and H. J. Hansen. 1992. Phase 1 water rental pilot project: Snake River resident fish and wildlife resources and management recommendations. Idaho Department of Fish and Game, Report to Bonneville Power Administration, Contract DE-BI79-91BP21416, Project 91-067. Boise.

**Project: 9107100 Snake River Sockeye Salmon Habitat And Limnological Research**
Sponsor: Shoshone-Bannock Tribes

CBFWA tier: 1
ISRP review: Delay funding until project describes that a risk assessment has been done pertaining to risks associated with altering food web structure. In addition, if funded, this project needs careful annual review with better reporting on results.

ISRP Comment/Question: Delay funding until project describes that a risk assessment has been done pertaining to risks associated with altering food web structure.

Response: All NEPA requirements before initiating a lake fertilization program phytoplankton (including picoplankton) and zooplankton are sampled thirteen times/year (Task 1.a) to identify community structures, densities, and biomass. If any significant shifts occur in phytoplankton species composition, fertilization will halt. More clarity is necessary from the ISRP to identify what is expected from a risk assessment. A technical oversight committee exists for this project, and all background material and supporting documents have satisfied their need regarding this project.

ISRP Comment/Question: Published reports (Trans. Am. Fish Soc .127[1]) suggest that "whole-lake fertilization would aid in the recovery of Snake River sockeye" and "fertilization should be considered an important short-term tool for decreasing erosion of stock", but also that "8 years after the end of a 3-year fertilization period, adult returns would only be 5% greater than for unfertilized conditions."

Response: This was based on a model that used chlorophyll a as a predictor of sockeye smolt production. This model also predicted after three years of fertilization the mean summer value for chlorophyll a would peak at 1 µg/L. After one and a half years of fertilization the true value was 0.8 µg/L for Redfish Lake and 1.1 µg/L in Alturas Lake (Griswold 1997) and rose to 1.4 µg/L in Redfish Lake after two and a half years (Taki et al. in review).

ISRP Comment/Question: Peer reviewed publications in fisheries or aquatics journals should come from this work. Given the nutrient-poor status of most of the Snake Basin, the results of the large-scale fertilization experiment represent an important opportunity for technology transfer to the fisheries community.

Response: The project sponsor agrees with this statement and currently have papers being developed for publication.

ISRP Comment/Question: The proposal does not seem to adequately describe the role and contribution of the subcontractor. It appears there is a change in the subcontractors (previously from Utah State with a good publication record for the project), which raised concerns among the reviewers regarding the project's continuity.

Response: The Shoshone-Bannock tribes do not feel that they are required to justify to the ISRP whom they choose to hire as subcontractors, as long as the subcontractors are qualified professionals. The average annual cost for using Biolines for the subcontract is $90,637, whereas the average annual cost for using Utah State University was $255,609. Adding $20,000/year for the Washington State University (primary productivity) subcontract, there is still a savings of $144,972/year for a total savings for the project of $579,888. Besides the substantial monetary savings of using a local subcontractor, the program benefits from having someone living in the Sawtooth Basin and someone who is more aware of what the Technical Oversight Committee's (TOC) needs are rather than dictating to the TOC what work the subcontractor feels is appropriate.

References:

Griswold, Bob. 1997. Limnology of the Sawtooth Valley Lakes. in D. Taki and A. Mikkelsen, editors. Snake River sockeye salmon habitat and limnological research. 1996 Annual Report. Bonneville Power Administration. Portland, Oregon

Gross, H.P., W.A. Wurtsbaugh, and C. Luecke. 1998. The Role of Anadromous Sockeye Salmon in the Nutrient Loading and Productivity of Redfish Lake, Idaho. Transactions of the American Fisheries Society. 127:1-18.

**Project: 9107200 Redfish Lake Sockeye Salmon Captive Broodstock Program**
Sponsor: Idaho Department of Fish and Game

CBFWA tier: 1
ISRP review: Fund. OK for a multi-year review cycle, review again in three to five years.

ISRP Comments/Question: Adult return should be one of the proposal's objectives and should be considered and measured in the tasks, including monitoring and evaluation. Success in the project is measured against smolt numbers (at various life stages), but not against adults, even recognizing that in some ways, this places an unfair burden of proof on the project. Nonetheless, ultimate success of the project (and related projects) depends solely on this parameter.

Response: The ISRP recommends that the proposal include an evaluation of adult sockeye salmon returns to the program. The ISRP should be made aware that all returning adults are captured at two weir sites and that several measures are in place to identify returning adults, including identifying fin clips, PIT tags, and the results of subsequent genetic analyses. The statement is made that ultimately, the program will be judged on the basis of its success in returning adults to the habitat. While agreeing that adult returns are a desirable component of this proposal, the project sponsor strongly disagrees that the program should be judged solely on this element. The IDFG feels that the genetic conservation element of the program is perhaps the most critical at this time. Only through the development of elaborate spawning plans and through the cryopreservation and re-use of milt from unique male sockeye salmon can this program effectively manage for genetic risk. Considering the reality of current smolt-to-adult survival rates, this type of risk management is essential.

ISRP Comments/Question: The proposal does not describe benchmarks of criteria that would terminate the project due to success or to failure. Future versions of the proposal should identify those benchmarks and address how they will dictate the ultimate fate of the project.

Response: The ISRP states that future proposals should include a description of benchmarks of criteria that would terminate the project due to success or failure. Management of such decisions occurs within IDFG and through the technical oversight committee process that guides the program. Because of the multi-agency coordination through the technical oversight committee, there is confidence that such decisions will be addressed in a timely manner.

ISRP Comments/Question: No mention is made of peer-reviewed publications as an end product of the Technology transfer section.

Response: The ISRP notes that no mention is made of any effort to produce peer-reviewed publications as an end product of the technology transfer section of the proposal. Proposal language will be modified to reflect the sponsor's interest in this process. At this point, the project sponsor feels it is premature to pursue the development of manuscripts for peer review.

**Project: 9107300 Idaho Natural Production Monitoring And Evaluation**
Sponsor: Idaho Department of Fish and Game

CBFWA tier: 1
ISRP review: Delay funding until the project is subjected to comprehensive independent peer review. There is a clear programmatic need for monitoring and evaluation of supplementation efforts, but this project provides little evidence that the job is getting done.

ISRP Comment/Question: This is an ongoing study that is too huge, amorphous, and multi-faceted to inspire confidence in the reviewers in the project's future success or the competence of the project personnel. It is really a multi-project program. Separate proposals for each major component are needed to make the objectives clear and to enable evaluation.

Response: The project **is** multifaceted. The large size of the project decreases the amount of time spent by project personnel on administrative and bureaucratic processes. One large project as opposed to several smaller ones decreases the number of budgets to be tracked and the number of proposals to be filled out yearly. Both of these activities require significant amounts of time. The size of the project has become problematic only in terms of the ISRP review due to an incompatibility in the amount of information requested in the project proposal form and the space restrictions imposed, resulting in less detail being supplied to reviewers than they would prefer. Separation of the project into its component parts **will** allow a more thorough discussion of objectives and activities, but will also prove costly due to the amount of time required.

The sponsor would like additional detail as to what activities the ISRP feels project personnel are not competent to carry out. One task that will not be conducted by project personnel is the population viability analysis (PVA). The PVA will be conducted by Brian Dennis of the University of Idaho.

ISRP Comment/Question: As it stands, the proposal is confused and has problems with logic of presentation. There is a lot of detailed background in the literature related to each of the proposal's objectives. The proposal should put these into context and interpret their findings.

Response: Regrettably, these comments were not substantiated. The project sponsor feels independent review can be a very useful tool, but criticisms must be specific. The proposal received extensive internal review and was not found to be confused or having problems with logic of presentation. Such charges must be substantiated to be beneficial to the sponsor.

ISRP Comment/Question: This project builds quantified targets into its objectives, but the tasks are not directly aligned with achieving these objectives for objectives 1 and 2.

Response: To achieve objectives 1 and 2, a complex number of actions and processes must occur, many of which are not under the control of project personnel. The project sponsor regrets that reviewers were unable to link tasks with the objectives.

Objective 1 - The first step in increasing the number of smolts produced per female is to identify watersheds where smolt production is sub-par. Additionally, fish production must be viewed relative to habitat parameters to identify opportunities to improve production. Bringing information (fish production and habitat-related) together is the first step in this process.

Objective 2 - Policy-makers and managers must be equipped with the best and most comprehensive information possible to achieve recovery. Smolt-to-adult return rates (SARs) are the most important measure of survival when considering recovery.

Task 2a is necessary to provide managers with information on which migration route holds the most promise to achieve recovery. Furthermore, monitoring SARs following changes to structures at the dams (e.g., extended length screens) or varying levels of spill, is one of the best means of determining success of the management action.

Task 2b is necessary so that the analysis in Task 2a can be conducted on steelhead as well as chinook. Insufficient numbers of wild steelhead (without the efforts of the sponsors) are tagged to allow for SAR determination by migration route.

Task 2c - Estimates of smolts/female allow the number of females necessary escaping to the Snake River basin to be estimated for recovery under current SARs. Conversely, SARs needed to achieve that escapement can also be calculated.

Task 2d provides managers with data regarding smolt arrival time so that spill can be employed to increase SARs.

ISRP Comment/Question: For example, in Objective 2, tasks are a series of "continue to" activities. Have the conduct of these activities in the past led to increased survival? If not, what is the justification of continuing the same activities?

Comments regarding Objective 2 are valid. Smolt-to-adult return rates are at the core of achieving recovery of Snake River salmon and steelhead. This project has developed methodology enabling the calculation of smolt-to-adult return rates for all smolt migration routes to provide the region with information regarding the best means to achieve recovery. Work will now begin to determine how best to maximize survival under the current hydrosystem configuration. Because project personnel do not have control over operations of the federal hydropower system is not good cause to stop providing information on how to maximize smolt survival.

ISRP Comment/Question: There is not much explanation for a large budget.

Tables describing where funds are spent were filled out according to instruction. If more detail is desired, the ISRP should recommend the proposal form be changed.

ISRP Comment/Question: The proposal mixes statements of method into the technical background and objectives. For example, the "products" of objectives are often stated as procedures. Therefore, the project's objectives have to some extent become the performance of methods rather than the attainment of biological results.

Response: This project serves a monitoring function. Development of methods to improve the quality of data collected is a primary, critical, and legitimate function of any monitoring program. The goal of this project is to recover Snake River salmon and steelhead by contributing the highest quality information possible to managers and policy makers. Power has not been granted to project personnel regarding land use decisions or the federal hydropower system required to achieve biological results. As such, the project can only ensure that methodologies employed supply the best available information.

ISRP Comment/Question: Success of the project depends on several assumptions, some of which could be tested. Perhaps the study would be better served if its scope were reduced and some to these assumptions tested.

Response: As noted above, the sponsor is eager for this kind of feedback, but unfortunately it was not specific enough to guide future efforts.

ISRP Comment/Question: Other problems with the proposal include: (1) Past activities described for the "project" are not consistent with the project title. (2) The project history states the types (subject categories) of past findings but not what was found, i.e., no real information. (3) In the methods section, the discussion of aging seems problematic.

Response: Space restrictions to the proposal form preclude a rundown of detailed findings over the life of this project.

Project personnel have met with the Nanaimo Aging lab in British Columbia and have identified a method that allows for accurate aging of Idaho's spring and summer chinook salmon.

**Project: 9202603 Idaho Model Watershed Administration/Implementation Support**
Sponsor: Idaho Soil Conservation Commission

CBFWA tier: 1
ISRP review: Fund for one year. Subsequent funding contingent on a performance audit of these three proposal, 9202603, 9401700, and 9306200, to determine if the results are benefiting fish and wildlife in a cost effective manner. The proposals should be consolidated into one proposal with better described methods for selecting and prioritizing restoration efforts and for monitoring and evaluation. They also need a timeline for termination.

ISRP Comments/Question: Fund for one year. Subsequent funding contingent on a performance audit of these three proposals, 9202603, 9401700, and 9306200, to determine if the results are benefiting fish and wildlife in a cost effective manner.

Response: The Model Watershed Staff has prepared the following responses to the above comments. The comments and criticisms are valuable and beneficial in ongoing efforts to provide the highest quality proposals within the identified process constraints. Responses apply collectively to the projects listed above.

ISRP Comments/Question: The proposals should be consolidated into one proposal with better described methods for selecting and prioritizing restoration efforts and for monitoring and evaluation. This proposal, along with 9401700 and 9306200, list exactly the same accomplishments, since 1993. Most of the narrative portions of all three proposals are also identical. Because of this, the three proposals either need to be combined into a single proposal, or two of the three should be discontinued.

Response: The three proposals should remain separate to maximize the involvement at the state level for proposal 9202603, which is sponsored by the Idaho Soil Conservation Commission. This is an administrative budget that ensures coordination and cooperation between community members and state and federal entities by providing a centralized location, computers and funding for information and education. Proposals 9401700 and 9306200, which are project proposals, are administered by local Soil and Water Conservation District boards and go directly into on the ground projects and include salary for a project planner/implementor.

Model Watershed priorities are clearly outlined by river reach in the Model Watershed Plan. Opportunities to implement are directly tied to landowner cooperation and willingness. Due to the constraints of proposal submission, the complete monitoring plan could not be included; however, an historical account of track record was provided, which displays accomplishments over time.

ISRP Comments/Question: They also need a timeline for termination.

Response: The initial starting point for the Model Watershed Plan (1995) was addressing mainstem habitat and passage problems within the Lemhi, Pahsimeroi, and East Fork sub-watersheds. Many projects emerged from this initial effort and many others came forward with the early momentum. As the MWP has built trust and credibility the need to update our planning documents and possibly expand our boundaries to the entire Upper Salmon River Basin.

ISRP Comments/Question: The project is more implementation than “watershed.”

Response: Where actions are outlined in the Model Watershed Plan/Assessment, the focus is towards meeting predetermined objectives. However, the “watershed” approach is well defined and documented in the plan, but the need to update the plan to link new emerging issues and actions has been identified (see additional response below).

ISRP Comments/Question: The proposal mentions “holistic” watershed management, but doesn’t describe in detail how the concept enters into its objectives or tasks.

Response: Where the Model Watershed Project works primarily on private land, the individual projects focus on improving each landowner’s operation (including public land operations), striving to meet Model Watershed objectives across the landscape.

ISRP Comments/Question: The proposal fails to describe US Forest Service and other federal management in the watershed. Nor does it adequately describe the biological component of their monitoring and evaluation.

Response: Both the U.S. Forest Service and the BLM work in concert with the Model Watershed on public and private lands, and personnel from each agency participate on both the Model Watershed Technical teams and the Advisory Committee. Of the federally managed streams on the Lemhi and East fork, 90% fall into the category of PFC (properly functioning condition) or properly functioning at risk with an upward trend. The biological component relates to improved fisheries habitat and improved riparian vegetation habitats. The Model Watershed project cooperates with and assists the Idaho Department of Fish and Game in collecting fisheries data (redd counts, PAR densities, stream habitat evaluations and water temperature) and will analyze this data. The Model Watershed Technical team will review this information on a semi-annual basis and prioritize projects based on the latest information collected.

ISRP Comments/Question: The planned "watershed plan update" ($10,000) is undefined.

Response: The Model Watershed Plan needs to be amended (updated) to include emerging techniques, add focus to tributaries, encompass new priority areas and to apply prescriptions for watershed (and thus fisheries) improvements "ridge top to ridge top."

ISRP Comments/Question: Hatchbox projects, while popular with the media and public, have a record of poor success.

Response: The Model Watershed hatchbox program is a small component of the larger educational effort throughout the upper Salmon subbasin, which promotes awareness of fish and fisheries ecology. The Hatchbox program is excellent at educating the public, particularly landowners, on sediment production and anadromous fish life history.

ISRP Comments/Question: While the model watershed program is a good one, and is doing important work that is gaining momentum in the community, a performance audit might result in some tightening of the program and its budget.

Response: The Idaho Model Watershed Project welcomes the suggestion and concept of a performance audit and recommends the weeks of August 16 to 20$^{th}$ or 23 thru 27$^{th}$, 1999.

**Project: 9202604 Life History Of Spring Chinook Salmon And Summer Steelhead**
Sponsor: Oregon Department of Fish and Wildlife

CBFWA tier: 1
ISRP review: Fund. The project has high programmatic value and the proposal is suitable for a multi-year review cycle; ISRP will not need to review it next year.

ISRP Comment/Question: Why is Objective 8 considered "descriptive and not subject to hypothesis testing?

Response: Objective 8 was developed to help gather information on the basic biology of chinook salmon from these local populations. The proposers are attempting to determine the proportion of juveniles in each population that exhibit alternate life history strategies as described in the proposal with the ultimate goal of incorporating this information into a life cycle model for these populations of spring chinook salmon.

ISRP Commnet/Question: The PIs should justify how much more they need to know and these needs should justify the project's expense.

Response: To best facilitate recovery efforts information necessary to complete life cycle models for the local chinook populations is essential. This information includes more than the smolt out migration and habitat data that has been collected for chinook salmon to date. Additional information on alternate life strategies of chinook juveniles and survival estimates by life stage are both necessary. In addition, no information has yet to be collected on summer steelhead life history. In order to be able to monitor the effects of hatcheries and other management

actions taken to recover listed stocks this project needs to be continued on a long-term basis until recovery is underway and hatchery evaluations are complete. Costs are high because labor intensive investigations of two species are underway in multiple basins and multiple areas within basins.

ISRP Comment/Question: Why is the habitat work needed, since they say they have already determined that juvenile salmon are most abundant in pools. It would seem that the habitat of the various rivers should be protected and restored in light of the dire situation of the salmon. Since apparently much field work has been done, the data should be analyzed and a report written.

Response: A third complete year of habitat work for the Lostine River is requested to enable assessment of any inter-annual variability in this data. Three complete years of habitat data have been collected in the upper Grande Ronde and Catherine Creek and these data have been reported in annual reports. A complete analysis of habitat preference and utilization is in progress and will be finalized after the third year of data is collected on the Lostine River.

Numerous reports and professional presentations have been completed including BPA Annual Progress Reports from 1994 – 1997. Presentations have been made to the Grande Ronde Model Watershed Technical Committee, Columbia Basin Fish and Wildlife Program Review, Lower Snake River Compensation Plan Review, Oregon Chapter American Fisheries Society, Western Division American Fisheries Society.

**Project: 9204800 Hellsgate Big Game Winter Range Operation And Maintenance Project**
Sponsor: Colville Confederated Tribes, Fish & Wildlife Department

CBFWA tier: 1
ISRP review: Do not fund. The proposal is technically inadequate.

ISRP Comment/Question: Do not fund. The proposal is technically inadequate.

Response: Based upon its status as an ongoing project with HEP and management plans completed, the Caucus approved this project for continued funding.

ISRP Comment/Question: The project is described, as a means to “provide increased bio-diversity,” but how this would be accomplished is not explained.

Response: The Colville Tribe has acquired about 2,360 acres of agricultural lands. These lands were used for production of agricultural crops, which are basically a monoculture. These lands will be restored over time to the types of vegetation communities that existed there prior to being converted to agriculture. The shrubs, grasses, forbs and sometimes trees that will be established on these lands will certainly be much more biologically diverse than a field of wheat.

Many thousands of acres of project lands are shrub-steppe or grassland types. These were used for livestock grazing. Native vegetative communities in many cases were severely degraded or eliminated. Many native plant species are only remnants in, or absent from these lands. Removal of livestock grazing can improve plant vigor and allow for re-colonization by native species.

ISRP Comment/Question: Proponents should describe their restoration methods and not just the tasks, as noted last year (see ISRP FY99 report, Appendix A page 65).

Response: Where possible, the idea of “letting nature heal itself” is pursued. A policy exists of waiting a minimum of two years after land disturbing activities, i.e., grazing, crop production, have ceased before initiating stand conversion or enhancement activities. This provides an opportunity to see how existing plants respond and what species may be in the seed bank. This often helps point the way for restoration efforts to proceed. If the stand is responding positively, costly artificial attempts to restore it may be avoided.

When artificial enhancement or restoration efforts are deemed necessary, usual methods are employed such as grass seeding, shrub planting, tree planting, weed control, and other methods outlined as acceptable in the CBFWA wildlife caucus manual for O & M activities.

ISRP Comment/Question: There is no clear relationship established between habitat acquisition and the species that will benefit, i.e. conservation status of species, seasonal distributions, limiting factors, etc.

Response: This is covered to some extent in Section 8-E of the proposal under proposal objective. Unlike anadromous fish, most of the wildlife species are not on the threatened or endangered list. Habitats are managed that help to mitigate for habitats that were lost. These habitats provide some or all of the basic life requirements of our target species and their representative guilds. Populations of these species on project lands may presently range from poor to excellent but their chances for survival and proliferation are certainly enhanced because the project sponsor is managing these habitats for their benefit.

In addition, the Habitat Evaluation Procedure developed by the USFWS and approved by the NWPPC is used to evaluate all project lands. The HEP takes into account all the life requirements of the target species using a specific habitat. This covers all the species/habitat interactions and functionality of that particular habitat.

ISRP Comment/Question: In addition, the proposal states “This project is not directly linked to projects being carried out by other entities in the basin.” The team found that statement incredible and failed to see how any acquisition program can be effective without coordination with other such programs in the area.

Response: This incredibility indicates that the review team has very little understanding of the wildlife mitigation program. The statement, in Section 8-B states “This project is not directly linked to projects being carried out by other entities in the basin. However, it is indirectly linked to other similar projects in the region.”

This project is involved in the many management discussions that take place within the basin. It has been evaluated and approved by the wildlife caucus as meeting the management goals of the region’s agencies and tribes.

Many of the wildlife mitigation projects in the basin, including this one, are basically designed as “stand alone” projects. If management rights are individually controlled at large enough core areas, meaningful mitigation for the benefit of a wide variety of species will occur. Benefits to wildlife on project lands will be realized over the long term regardless of whether adjacent agencies and entities meet their full resource obligations or not. However, populations of species that do use the habitat on mitigation project lands stand to benefit appreciably from good ecosystem management on adjacent lands.

The Colville Tribes is the entity responsible for the management of most of the areas where, this project is located. The project is thoroughly coordinated with the Tribes overall Resource Management programs.

ISRP Comment/Question: The proposal is not a stand-alone document and it should be. It refers to a draft document but they do not summarize the document.

Response: This was an oversight on the proposers part. The document is cited is their draft site-specific management plan and a summary of it follows.

A site specific management plan has been developed for project lands acquired prior to 1999. It is in the final draft stage. Site specific management plans will be developed and added to this plan as new lands are acquired. Within this plan, the project properties are described as management units based on their location and the objectives by species for the unit, i.e., sharp-tailed grouse breeding area, mule deer winter range, etc. These management units are then inventoried and mapped based on the soil polygons and vegetative habitat types that occur there. This provides the ability to predict what the site is capable of. A management unit may contain a few or many different soil and habitat types. The current vegetative communities and their condition are then described for each stand or cover type. Then the desired future condition is developed for the stand based on the management objective for the management unit. An example would be a unit that is managed for mule deer winter range. The stand in question is a stand of brush that is being invaded by young pine trees. The site specific management plan for this stand would

specify that it is to be maintained as a foraging area for deer. Thus, when the invading pines reach a certain stem density and canopy closure, they will be thinned in order to perpetuate the stand of desirable browse species.

Thus, the plan describes not only current and desired future conditions of the units, but methods to attain the desired future condition as well. This plan contains over 123 pages total.

ISRP Comment/Question: The proposal is quite vague in explaining what tasks are required for specific sites and why. A reviewer cannot tell what specifically needs to be done in particular areas to meet specific objectives. Thus, one cannot begin to assess the appropriateness of the budget. Too little information is provided on objectives, methods, enhancement goals, and measurable milestones, although the proposal says that its purpose is to "protect, enhance and evaluate habitats and species." The group noted that the proponents were advised in the ISRP's FY99 comments to better justify their project.

Response: Each site requires different tasks to reach mitigation and Tribal objectives because each management unit has multiple habitats and species. The site specific management plan submitted to BPA details objectives, methods, enhancement goals and measurable milestones for each unit. The proposal does include objectives and tasks to meet mitigation requirements and provide the reviewer with the understanding of how funding would be used throughout the fiscal year. This is an ongoing project where objectives may or may not be met during a short time span, but will be achieved over the life of the project.

As stated in the title, this is an operation and maintenance proposal. There is a little enhancement: some small acreages of perennial grass seeding, a little shrub and tree planting. The only major enhancement effort at present in this proposal is fencing the boundaries of formerly unfenced properties to control livestock trespass. This type of fencing is considered enhancement by BPA.

**Project: 9205900 Amazon Basin/Eugene Wetlands Phase Two**
Sponsor: The Nature Conservancy

CBFWA tier: 1
ISRP review: Fund

ISRP Comment/Question: Fund. A well-written proposal in behalf of somewhat expensive conservation easements. The authors do not make a wholly convincing case that this is the most cost-effective way to protect fish and wildlife in the area. Monitoring provisions are well presented.

Response: CBFWA recommended funding the ongoing O&M portion of this project. The Wildlife Caucus rejected funding for continued acquisitions based upon the extra-ordinary expense of the identified properties (nearly $70,000/acre). This is not a cost-effective project.

**Project: 9206100 Albeni Falls Wildlife Mitigation**
Sponsor: Albeni Falls Interagency Work Group

CBFWA tier: 1
ISRP review: Fund for one year. Subsequent funding contingent on a better description of the maintenance and monitoring methods, as noted in the ISRP's FY99 report, Appendix A, page 65-66. This proposal may have been adequate for the requested multi-year funding if the proposal had provided this information.

ISRP review: Fund for one year. Subsequent funding contingent on a better description of the maintenance and monitoring methods, as noted in the ISRP's FY99 report, Appendix A, page 65-66. This proposal may have been adequate for the requested multi-year funding if the proposal had provided this information.

ISRP Recommendation: "Fund for one year. Subsequent funding contingent on a better description of the maintenance and monitoring methods, as noted in the ISRP's FY99 report, Appendix A, page 65-66. This proposal may have been adequate for the requested multi-year funding if the proposal had provided this information:

Response: At the time the fiscal year 2000 project proposal was submitted for review, the site-specific management plans, detailing monitoring and evaluation methods, were not completed. There are several reasons for the lack of monitoring and evaluation details in the proposal:

1. The completion of site-specific wildlife management plans and detailed monitoring and evaluation procedures occurred after the fiscal year 2000 project proposal was submitted. As per the IDFG-BPA Memorandum of Agreement for Northern Idaho Wildlife Mitigation, the IDFG is required to complete a site-specific wildlife management plan within two years of acquiring a property. The IDFG completed all the management plans (with a detailed plan for monitoring and evaluation) in the winter of 1998 and submitted them to the CBFWA Wildlife Caucus in March 1999 for approval. The wildlife managers determined the management plans and monitoring and evaluation methods were consistent with what others are doing in the region.

2. The wildlife managers are working on standardized methods for monitoring and evaluation that will be used region wide. As yet, the methods are not complete. The IDFG and the Albeni Falls Work Group will adhere to the standardized methods for monitoring and evaluation once they are completed. In the interim, the project sponsor will be monitoring and evaluating wildlife habitat and populations using a variety of methods (see response to question #5 below).

3. IDFG has not yet contracted BPA funds for operations and maintenance. The IDFG acquired four properties in 1997-1998 and has not yet received BPA O&M funding. Limited by staff and funding, the IDFG has conducted limited monitoring and evaluation activities using its own funds. Funding to initiate monitoring and evaluation along with operations and maintenance activities will be contracted by August 1999.

ISRP Comment/Question: As the ISRP commented in its FY99 review (page 65-66), the description of methods for maintenance and monitoring continue to be inadequate. This proposal could still use more detail on planned maintenance and monitoring.

Response: The timing issue looms large here. At the time the project proposal was submitted to BPA for inclusion in the FY 2000 process (November 1998), site specific management plans for the projects that are already on-the-ground, had not yet been completed. The maintenance and monitoring information referred to by the ISRP as lacking is contained within these plans and has been reviewed by the CBFWA Wildlife Caucus for regional consistency.

The IDFG submitted to the Wildlife Caucus in late spring of 1999 a response to questions, which were meant to address the current status of monitoring and evaluation efforts on wildlife mitigation lands within the region. The questions and response follows:

1. Name of project(s), location? Project: Albeni Falls. Location: Lake Pend Oreille (Upper Columbia subbasin). Specific IDFG properties include: Henderson Ranch, Denton Slough, Carter's Island, and Ginter.

2. What specie(s) are being monitored? Are they NPPC Program target specie(s)? Bald eagle, Mallard, Canada goose, Muskrat, White-tailed deer, Yellow warbler, Black-capped chickadee, and elk are being monitored; all except elk are NPPC Program target species.

3. What characteristics/parameters of wildlife populations are being measured? The IDFG will monitor waterfowl and songbird species incidence and occurrence; waterfowl nesting success and annual productivity; Canada goose annual productivity; elk herd size and calf production; muskrat presence/absence.

4. What habitats are being monitored? How? Are they NPPC Program priority habitats? The IDFG will monitor emergent herbaceous wetlands, deciduous scrub-shrub wetlands, and forested wetlands; all habitat types are high priority NPPC Program habitats.

5. What methodology(s) or techniques are being used for both specie(s) and habitat monitoring? The IDFG has not started monitoring yet (see question 6). Monitoring and evaluation will begin in fiscal year 2000 and will include the following: low-flight aerial photography every five years to monitor overall wetland vegetation composition,

quality, coverage, diversity, and distribution; HEP analysis every five years to compare against baseline; permanent vegetative photo plots will be established to measure height, density, canopy cover, and survival of various vegetation species; ocular estimates of noxious weed acreage; water level monitoring using a staff gage will be completed to determine wetland vegetation response and waterfowl food productivity; nest searches will be conducted using drag lines to determine waterfowl nesting success; and songbird presence/absence will be determined using random transects.

6. How long has the M&E program been in place for this project? The IDFG has not received BPA O&M funding yet for the parcels acquired in 1997-1998. Monitoring activities have been minimal due to funding and staffing deficiencies; however IDFG initiated some monitoring and evaluation activities in 1998 using its own funds. BPA funds will be used for monitoring and evaluation in fiscal year 2000.

**Project: 9303501 Protect Anadromous Salmonids In The Mainstem Corridor**
Sponsor: Columbia River Inter-Tribal Fish Commission – Law Enforcement Department

CBFWA tier:
ISRP review: Fund for one year. Subsequent funding contingent on more complete background information on the magnitude of the illegal harvest problem and the expected benefits to fish and wildlife.

ISRP Comment/Question: Do not fund. This is not a scientifically justifiable proposal. An audit of both scientific accomplishments to date, and project expenditures should be conducted before any consideration is given to further expenditure of Program funds on this project.

Response: The ISRP review raises a number of significant issues that are of critical importance, not only to the Lower Red River Meadow Restoration Project, but also to the entire regional strategy related to river restoration and the recovery of salmonid populations.

The “normative river” concept was articulated by the Independent Science Group (ISG, 1996; ISG, 1999) as the conceptual foundation for the Columbia Basin Fish and Wildlife Program (NPPC, 1994) actions. The approaches that underlie this concept are integrated into the restoration of Red River at both the watershed and stream reach scales. Habitat improvements at the watershed scale are addressed by way of changing land management practices (Nez Perce National Forest Plan, USDA, 1987) and at the stream reach scale through implementation of riverine-riparian habitat restoration such as the Lower Red River Meadow Restoration Project.

Overall, the field of ecological restoration is dynamic. New ideas and scientific findings in the past few years have contributed to rapid changes in the philosophy of river restoration and available tools. We recognize that different philosophies exist and can generate considerable debate. This project will document the successes and challenges of designing and implementing restoration features using the normative river concept. In this manner, the sponsors plan to contribute not only to the salmonid recovery effort in the Columbia River Basin but also to the advancement of the science of ecological restoration and to the development of regional guidelines and recommendations for restoration of river ecosystems and salmonid habitat.

ISRP Comment/Question: This project is intended to enhance fish and wildlife habitat in the Snake River Basin. It should have proceeded based on assessments of successes or failures of similar projects elsewhere such as the Bear Valley Creek restoration project of the 1980’s.

Response: It was understood from the original proposal (1993) that this project’s solution for stream stabilization and fish habitat enhancement was unique to this region and that no other projects were currently operating under this “soft engineering” restoration philosophy.

The project team represents experience on at least 200 restoration/enhancement projects of river and wetland systems throughout the US and Europe. Data, philosophy, and selection of design and success criteria from these systems, as well as local experience from the Technical Advisory Committee (TAC), Nez Perce Tribe (NPT), and US Forest Service (USFS), has figured prominently throughout the design process.

The rare, prime meadow habitat areas within the Red River drainage are almost exclusively privately owned. When one of the four parcels in the lower meadow came up for sale, BPA, IDFG, Rocky Mountain Elk Foundation, Trout Unlimited, and National Fish and Wildlife Foundation realized a unique opportunity for fish and wildlife habitat protection and restoration and moved quickly to collectively purchase the parcel. The parcel, now the Red River Wildlife Management Area (RRWMA), offered facilities to become a conservation education center providing both outdoor and indoor classroom experiences for students of all ages. Several groups have used the facilities during the past few years. The site is gaining popularity as evidenced by additional support and interest in these educational opportunities from the Charles DeVlieg Foundation, the Grangeville School District, Communities Creating Connections, Inc., University of Idaho, and others. Our restoration project is serving as an outdoor classroom and model/demonstration, not only for students but for local landowners as well, to learn about the benefits of restoration and the importance of wise watershed management. Successes on the RRWMA may convince other landowners to participate in some form of restoration or to change land use management, thus expanding and linking restoration efforts throughout the entire watershed.

This project is a full-scale enhancement and stabilization of a river channel. Although this approach is not applicable to all sites, there are relatively few projects of similar scope that attempt to increase sinuosity and stabilize the channel over an extended reach. A light touch or natural recovery (passive) approach is less controversial, less expensive, and easier to permit. However, a pre-project review by an interdisciplinary team of experts (Brunsfeld et al., 1996) determined that a passive restoration approach would have limited success in establishing native riparian vegetation within a reasonable time frame and questioned if the vegetation would establish at all. This determination was based on pre-existing ecosystem conditions in the meadow including lack of native seed sources, reduced number of out of channel flooding events, competition from exotic herbaceous plants, and mid-summer water tables below the root zone of the once prevalent native, woody vegetation. Active grazing on the RRWMA was eliminated in 1993 and, to date, visual evidence of natural recruitment of woody vegetation is essentially nonexistent. The team agreed that channel modifications that raise the water table would be required to establish soil moisture conditions necessary to support extensive native riparian plant communities similar to those that existed historically. In the long-term, the evolution of overhanging vegetation and dense, fibrous root systems will enhance fish habitat by providing shade and cover, stabilizing eroding streambanks, and supplying food for aquatic insects.

The members of the project team are cooperating with several related projects to evaluate and document results of varying restoration philosophies in an effort to provide additional scientific information. For example, in a collaborative effort (funded independently from Red River), the Nez Perce Forest, Nez Perce Tribe and the University of Idaho are undertaking a comparative study of three restoration projects within the SF Clearwater drainage that have utilized different philosophies:

1. Red River Upper Meadow (Mullins Ranch) - a ‘classification’ design.
2. Red River Lower Meadow (RRWMA) – a soft approach that attempts to restore the channel to a natural meandering configuration with minimal ‘hard’ stabilization and relies on natural processes to restore channel form and function.
3. Meadow Creek (McComas Meadows)– a natural recovery (removal of grazing and minor floodplain structure).

ISRP Comment/Question: If fish runs are restored to Red River, does the restored section contribute more smolts (and other plant and other species’ abundances) to the outmigrant population than similar areas that were left to “heal” on their own?

Response: The conceptual foundation for the Red River project is derived from the same operating principles as the Independent Science Group’s Normative River Concept, namely riverine geomorphology, riverine ecological theory, an understanding of salmonid life histories, and salmonid habitat requirements (ISG, 1999). The lower Red River was physically straightened and the riparian vegetation eliminated by dredge mining and grazing or in an attempt to maximize pasture area in the meadow. The incised reach with increased gradient would not be expected to “heal” on its own until a time frame that spans centuries. The Red River project restores the physical and biological processes of the river/wet meadow ecosystem to promote the evolution of dynamic equilibrium and facilitate the development of critical spawning and rearing habitats.

A fundamental principle of the project is to increase spawning and rearing habitat in a drainage where this type of habitat is currently very limited. The sponsors saw the first fish response to improved habitat in 1997, when

returning adults built 10 redds in historic meanders that were reconnected in 1996. This was immediate and conclusive evidence that the project is providing additional critical habitat. Aside from this immediate feedback, a comprehensive monitoring program tracks the restoration of the stream channel and instream and riparian habitat over a long term period.

The sponsors recognize that fish migration to spawning tributaries (and therefore, the number of redds) in any given year is highly variable due to the influences of downstream conditions. Because of these circumstances, a direct relationship between the restoration activities and trends in fish populations and redd counts is difficult to assess. One major assumption is that restoring stable, historic river channel sinuosity, geometry, sediment transport regime, and riparian vegetation will result in an increase in the quantity, quality, and diversity of instream habitat for anadromous and resident fish. In turn, improved spawning and rearing habitat conditions are expected to increase the number of salmon spawners (and redds) in the restored reaches and improve the health and survival rates of fry and juveniles. Increased offspring survival means greater numbers of salmon and steelhead juveniles that begin their migration to the ocean from Red River. The majority of the monitoring parameters are measurements of physical characteristics directly related to high quality spawning and rearing habitat of key species.
IDFG monitors fish population density, composition, and number of salmon redds in the Red River and other drainages within the SF Clearwater Subbasin. These results are documented in the monitoring reports and trends will be trackable over time to make comparisons between pre-restoration data to post-restoration data. The sponsors expect to document a long-term trend of increasing numbers of chinook spawning in Red River, larger populations of chinook and steelhead juveniles, larger percentages of total species composition comprised of chinook and steelhead juveniles, and increased survival rates of fry and juveniles using the project area.

ISRP Comment/Question: The watershed is still being grazed and logged – project proposes a major structural solution without addressing ongoing land management activities. Logging roads and mining have resulted in sediment loads that diminish the Red River's potential prospect of becoming a major spring chinook and steelhead production stream – Is information available comparing the sediment yield of this basin with others not having the same management history? Then, an argument should be made as to how sediment load reductions could or will be achieved.

Response: The principal water quality parameters of concern in the lower Red River meadow are water temperature and sediment. Red River's sediment yield is approximately 24% above natural conditions, the highest of all the SF Clearwater tributaries. Water temperatures in the meadow are elevated in the summer months due to the wide, shallow low flow channel and lack of riparian vegetative cover. Both of these conditions reduce fish habitat quality in the meadow and the watershed as a whole.

The Nez Perce National Forest (NPNF) and the Lower Red River Meadow Restoration Project are addressing these issues together. The project focuses on solutions at the local, reach level by reshaping channel cross-sectional shape and planform alignment and planting native riparian vegetation to 1) decrease width to depth ratios, 2) increase sinuosity, 3) stabilize stream banks, 4) reconnect floodplain function, and 5) provide overhanging vegetation and stable undercut banks. The NPNF has implemented habitat improvements in both riparian and upland areas of the watershed for several years. Since 1984, BPA and the NPNF have focused restoration activities on critical habitats within the watershed using bank stabilization techniques, fencing, and vegetative plantings (Baer et al., 1990; Siddall, 1992). In 1987, the lower Red River area of the watershed was estimated at 50 percent of its habitat potential (USDA, 1987). The NPNF fishery/water quality objective for the Red River watershed, as outlined in the Forest Plan, is to restore the watershed's habitat potential to 90 percent. The NPNF will continue habitat enhancement work initiated in the early 1980s, both in channel and in upland areas, to achieve overall recovery of the watershed. Road stabilization is a major component of upland work. Since 1990, new road construction and timber harvest have decreased significantly in the watershed (Nick Gerhardt, USFS, personal communication, 1999).

ISRP Comment/Question: Why does this particular reach of 4.4 miles represent a "bottleneck" to production in the watershed? Is this a priority area for this kind of investment?

Response: A detailed watershed assessment that targeted the restoration of the lower meadow as a priority did not exist prior to project initiation in 1994. However, several documented sources agree that the potential for high quality fish habitat exists within the Red River drainage and its meadow reaches, in particular.

For example, the Clearwater River Subbasin Salmon and Steelhead Production Plan (Nez Perce Tribe and Idaho Department of Fish and Game, 1990) was developed, as directed by the Northwest Power Planning Council (NWPPC, 1987). Each of the 31 subbasins in the Columbia River Basin were to establish strategies that, together, would achieve the Columbia Basin Fish and Wildlife Program's (NWPPC, 1987) goal of doubling salmon and steelhead production in the Columbia River. The recommended strategy for the Clearwater River Subbasin is comprised of several actions, including acquiring private lands to protect significant anadromous fish habitat and to implement habitat improvement projects to improve degraded conditions in the Red River drainage.

The upper and lower Red River meadows are two of only five sites within the entire Red River drainage characterized by low-gradients and possess the potential for high quality chinook and steelhead habitat (Dave Mays, Fisheries Biologist, Nez Perce National Forest, personal communication, 1997).

Although currently in a degraded condition, the Red River watershed is classified as a "historic stronghold" for bull trout, naturalized spring chinook salmon, steelhead trout, and westslope cutthroat trout. Red River has a very high habitat potential for bull trout, spring chinook salmon, and westslope cutthroat trout and a high habitat potential for steelhead trout (USDA, 1998).
"Restoration of this watershed is necessary to stabilize existing populations, along with providing the best opportunity for a long term population source area in the future . . . .[The] riparian and instream processes need to be restored in some areas, primarily in the meadow sections. . . . The aquatic restoration in this watershed needs to proceed as quickly as possible . . [since] . .it would take a sustained effort over many years to restore the aquatic function of Red River. . . .This watershed contains a disproportionately high amount of the aquatic potential in the subbasin." (USDA, 1998).

The South Fork Clearwater River Landscape Assessment (USDA, 1998) recommended that the first step in the Red River watershed restoration effort should be the completion of an Ecosystem Analysis at the Watershed Scale (EAWS) and considered this recommendation a high priority from an aquatics perspective. The Nez Perce National Forest has plans to complete the EAWS for Red River in 2000 or 2001.

The team concurs that watershed management is an essential component of any river enhancement plan; however, many management actions take several years to become effective – even if it is possible to influence large areas of the watershed. This issue will be addressed by the USFS in their watershed assessment. The approach adopted here provides more immediate benefits until the land-use planning program is put in place.

ISRP Comment/Question: Difficult to identify or assess the project's achievements to date. There is considerable concern about the high cost and uncertain biological effectiveness. The project is of questionable benefit to fish and wildlife. There is nothing in the proposal indicating that any real habitat improvements will result from this project.

Response: Several pre-project analyses were completed that documented existing conditions in the meadow, including Stream Habitat Reconnaissance Survey [Pocket Water Inc. (PWI), 1994a], Evaluation of Stream Temperatures (PWI, 1994b), Cultural Resources Survey (Luttrell, 1995), Project Restoration Design Criteria (River Masters Engineering, 1995), Pre-project Environmental Assessment [Bonneville Power Administration (BPA), 1996], and Analysis of Baseline Conditions and Restoration Alternatives (Brunsfeld et al., 1996).

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A comprehensive, post-construction monitoring program was established early in 1997 as a coordinated effort among project participants with a wide variety of expertise. The monitoring plan includes specific monitoring

parameters, methodology, and performance criteria chosen to assess the attainment of project goals and objectives (summarized on pp. 23-25 of the FY2000 Funding Proposal). The monitoring program was reevaluated in early 1999 and adjustments were made to refine methods and performance criteria based on results and experiences in 1997 and 1998.

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Response: The sponsors use a "soft engineering" or natural river restoration philosophy that restores the natural physical and biological processes to return the stream to a state of dynamic equilibrium, minimizing the use of rigid, unnatural bank stabilizing structures and the need for future human intervention. A significant amount of coordination, communication, and cooperation between agencies, organizations, and consultants is necessary to interpret modeling scenarios, produce conceptual design alternatives, monitor and evaluate constructed phases, apply adaptive management to improve future designs, and disseminate information and experiences.

Recognizing that an accelerated recovery approach requires more planning and consensus-building, the ISWCD ensures that the focus remains on implementation by insisting that at least 50 percent of the total project cost MUST go 'into the ground' directly. The remaining costs fund the extensive TAC reviews, design modifications, monitoring, interpretative facilities and education/public outreach.

The project is based on applying an adaptive management strategy, rather than constructing a complete meadow of new meanders. Monitoring data from each phase has been used to refine the design for subsequent phases. The detailed monitoring program has allowed later phases of the project to be designed much closer to a condition of 'dynamic equilibrium.'

The project's in-channel work window is limited to six weeks per year to reduce disturbance to salmon and steelhead spawning and rearing activities. A high degree of coordination, effective planning, and efficient use of resources is key. A project becomes more expensive when only a short reach of river channel can be restored in any given field season.

Water quality standards must be upheld during construction requiring erosion control and suspended sediment mitigation procedures and continuous turbidity monitoring that provide immediate feedback to the construction crew on the effectiveness of their best management practices.

Intensive planting methods are necessary immediately after each new channel section is restored. Raw stream bank soils, exposed by reconstruction activities during the field season, are extremely vulnerable to the erosive forces of flood flows during the following spring. Both native seed and seedlings vegetation is planted immediately after restoration work to stabilize these raw soils. A limited amount of precipitation occurs in the summer months at lower Red River meadow requiring fertilization and irrigation to establish vigorous vegetative and root growth before the end of the growing season. These aggressive planting, fertilization, and irrigation practices are implemented only for a short time, immediately following construction during the first field season, and necessary to provide the highest degree of soil stabilization prior to the onset of the spring flood flows. In subsequent years, the native vegetation becomes self-sustaining as the channel reconstruction improves hydrologic conditions conducive to their survival.

There are relatively few projects of similar scope that attempt to increase sinuosity and stabilize the channel over an extended reach. Examples will be provided directly to NPPC. Additional examples can be provided from other regions or states but are highly variable and not directly comparable given different environmental and political

constraints. For example, typical costs in California for restoration similar to ours can run as high as $1,000.00 per linear foot (Guinon, 1989).

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**Project: 9303501 Enhance Fish, Riparian, And Wildlife Habitat Within The Red River Watershed**
Sponsor: Idaho County Soil and Water Conservation District

CBFWA tier: 1
ISRP review: Do not fund. This is not a scientifically justifiable proposal. An audit of both scientific accomplishments to date, and project expenditures should be conducted before any consideration is given to further expenditure of Program funds on this project.

ISRP Comment/Question: Do not fund. This is not a scientifically justifiable proposal. An audit of both scientific accomplishments to date, and project expenditures should be conducted before any consideration is given to further expenditure of Program funds on this project.

Response: The ISRP review raises a number of significant issues that are of critical importance, not only to the Lower Red River Meadow Restoration Project, but also to the entire regional strategy related to river restoration and the recovery of salmonid populations.

The "normative river" concept was articulated by the Independent Science Group (ISG, 1996; ISG, 1999) as the conceptual foundation for the Columbia Basin Fish and Wildlife Program (NPPC, 1994) actions. The approaches that underlie this concept are integrated into the restoration of Red River at both the watershed and stream reach scales. Habitat improvements at the watershed scale are addressed by way of changing land management practices (Nez Perce National Forest Plan, USDA, 1987) and at the stream reach scale through implementation of riverine-riparian habitat restoration such as the Lower Red River Meadow Restoration Project.

Overall, the field of ecological restoration is dynamic. New ideas and scientific findings in the past few years have contributed to rapid changes in the philosophy of river restoration and available tools. We recognize that different philosophies exist and can generate considerable debate. This project will document the successes and challenges of designing and implementing restoration features using the normative river concept. In this manner, the sponsors plan to contribute not only to the salmonid recovery effort in the Columbia River Basin but also to the advancement of the science of ecological restoration and to the development of regional guidelines and recommendations for restoration of river ecosystems and salmonid habitat.

ISRP Comment/Question: This project is intended to enhance fish and wildlife habitat in the Snake River Basin. It should have proceeded based on assessments of successes or failures of similar projects elsewhere such as the Bear Valley Creek restoration project of the 1980's.

Response: It was understood from the original proposal (1993) that this project's solution for stream stabilization and fish habitat enhancement was unique to this region and that no other projects were currently operating under this "soft engineering" restoration philosophy.

The project team represents experience on at least 200 restoration/enhancement projects of river and wetland systems throughout the US and Europe. Data, philosophy, and selection of design and success criteria from these systems, as well as local experience from the Technical Advisory Committee (TAC), Nez Perce Tribe (NPT), and US Forest Service (USFS), has figured prominently throughout the design process.

The rare, prime meadow habitat areas within the Red River drainage are almost exclusively privately owned. When one of the four parcels in the lower meadow came up for sale, BPA, IDFG, Rocky Mountain Elk Foundation, Trout Unlimited, and National Fish and Wildlife Foundation realized a unique opportunity for fish and wildlife habitat protection and restoration and moved quickly to collectively purchase the parcel. The parcel, now the Red River Wildlife Management Area (RRWMA), offered facilities to become a conservation education center providing both outdoor and indoor classroom experiences for students of all ages. Several groups have used the facilities during the past few years. The site is gaining popularity as evidenced by additional support and interest in these educational opportunities from the Charles DeVlieg Foundation, the Grangeville School District, Communities Creating

Connections, Inc., University of Idaho, and others. Our restoration project is serving as an outdoor classroom and model/demonstration, not only for students but for local landowners as well, to learn about the benefits of restoration and the importance of wise watershed management. Successes on the RRWMA may convince other landowners to participate in some form of restoration or to change land use management, thus expanding and linking restoration efforts throughout the entire watershed.

This project is a full-scale enhancement and stabilization of a river channel. Although this approach is not applicable to all sites, there are relatively few projects of similar scope that attempt to increase sinuosity and stabilize the channel over an extended reach. A light touch or natural recovery (passive) approach is less controversial, less expensive, and easier to permit. However, a pre-project review by an interdisciplinary team of experts (Brunsfeld et al., 1996) determined that a passive restoration approach would have limited success in establishing native riparian vegetation within a reasonable time frame and questioned if the vegetation would establish at all. This determination was based on pre-existing ecosystem conditions in the meadow including lack of native seed sources, reduced number of out of channel flooding events, competition from exotic herbaceous plants, and mid-summer water tables below the root zone of the once prevalent native, woody vegetation. Active grazing on the RRWMA was eliminated in 1993 and, to date, visual evidence of natural recruitment of woody vegetation is essentially nonexistent. The team agreed that channel modifications that raise the water table would be required to establish soil moisture conditions necessary to support extensive native riparian plant communities similar to those that existed historically. In the long-term, the evolution of overhanging vegetation and dense, fibrous root systems will enhance fish habitat by providing shade and cover, stabilizing eroding streambanks, and supplying food for aquatic insects.

The members of the project team are cooperating with several related projects to evaluate and document results of varying restoration philosophies in an effort to provide additional scientific information. For example, in a collaborative effort (funded independently from Red River), the Nez Perce Forest, Nez Perce Tribe and the University of Idaho are undertaking a comparative study of three restoration projects within the SF Clearwater drainage that have utilized different philosophies:

1. Red River Upper Meadow (Mullins Ranch) - a ‘classification’ design.
2. Red River Lower Meadow (RRWMA) – a soft approach that attempts to restore the channel to a natural meandering configuration with minimal ‘hard’ stabilization and relies on natural processes to restore channel form and function.
3. Meadow Creek (McComas Meadows)– a natural recovery (removal of grazing and minor floodplain structure).

ISRP Comment/Question: If fish runs are restored to Red River, does the restored section contribute more smolts (and other plant and other species’ abundances) to the outmigrant population than similar areas that were left to “heal” on their own?

Response: The conceptual foundation for the Red River project is derived from the same operating principles as the Independent Science Group’s Normative River Concept, namely riverine geomorphology, riverine ecological theory, an understanding of salmonid life histories, and salmonid habitat requirements (ISG, 1999). The lower Red River was physically straightened and the riparian vegetation eliminated by dredge mining and grazing or in an attempt to maximize pasture area in the meadow. The incised reach with increased gradient would not be expected to “heal” on its own until a time frame that spans centuries. The Red River project restores the physical and biological processes of the river/wet meadow ecosystem to promote the evolution of dynamic equilibrium and facilitate the development of critical spawning and rearing habitats.

A fundamental principle of the project is to increase spawning and rearing habitat in a drainage where this type of habitat is currently very limited. The sponsors saw the first fish response to improved habitat in 1997, when returning adults built 10 redds in historic meanders that were reconnected in 1996. This was immediate and conclusive evidence that the project is providing additional critical habitat. Aside from this immediate feedback, a comprehensive monitoring program tracks the restoration of the stream channel and instream and riparian habitat over a long term period.

The sponsors recognize that fish migration to spawning tributaries (and therefore, the number of redds) in any given year is highly variable due to the influences of downstream conditions. Because of these circumstances, a direct relationship between the restoration activities and trends in fish populations and redd counts is difficult to assess.

One major assumption is that restoring stable, historic river channel sinuosity, geometry, sediment transport regime, and riparian vegetation will result in an increase in the quantity, quality, and diversity of instream habitat for anadromous and resident fish. In turn, improved spawning and rearing habitat conditions are expected to increase the number of salmon spawners (and redds) in the restored reaches and improve the health and survival rates of fry and juveniles. Increased offspring survival means greater numbers of salmon and steelhead juveniles that begin their migration to the ocean from Red River. The majority of the monitoring parameters are measurements of physical characteristics directly related to high quality spawning and rearing habitat of key species.
IDFG monitors fish population density, composition, and number of salmon redds in the Red River and other drainages within the SF Clearwater Subbasin. These results are documented in the monitoring reports and trends will be trackable over time to make comparisons between pre-restoration data to post-restoration data. The sponsors expect to document a long-term trend of increasing numbers of chinook spawning in Red River, larger populations of chinook and steelhead juveniles, larger percentages of total species composition comprised of chinook and steelhead juveniles, and increased survival rates of fry and juveniles using the project area.

ISRP Comment/Question: The watershed is still being grazed and logged – project proposes a major structural solution without addressing ongoing land management activities. Logging roads and mining have resulted in sediment loads that diminish the Red River's potential prospect of becoming a major spring chinook and steelhead production stream – Is information available comparing the sediment yield of this basin with others not having the same management history? Then, an argument should be made as to how sediment load reductions could or will be achieved.

Response: The principal water quality parameters of concern in the lower Red River meadow are water temperature and sediment. Red River's sediment yield is approximately 24% above natural conditions, the highest of all the SF Clearwater tributaries. Water temperatures in the meadow are elevated in the summer months due to the wide, shallow low flow channel and lack of riparian vegetative cover. Both of these conditions reduce fish habitat quality in the meadow and the watershed as a whole.

The Nez Perce National Forest (NPNF) and the Lower Red River Meadow Restoration Project are addressing these issues together. The project focuses on solutions at the local, reach level by reshaping channel cross-sectional shape and planform alignment and planting native riparian vegetation to 1) decrease width to depth ratios, 2) increase sinuosity, 3) stabilize stream banks, 4) reconnect floodplain function, and 5) provide overhanging vegetation and stable undercut banks. The NPNF has implemented habitat improvements in both riparian and upland areas of the watershed for several years. Since 1984, BPA and the NPNF have focused restoration activities on critical habitats within the watershed using bank stabilization techniques, fencing, and vegetative plantings (Baer et al., 1990; Siddall, 1992). In 1987, the lower Red River area of the watershed was estimated at 50 percent of its habitat potential (USDA, 1987). The NPNF fishery/water quality objective for the Red River watershed, as outlined in the Forest Plan, is to restore the watershed's habitat potential to 90 percent. The NPNF will continue habitat enhancement work initiated in the early 1980s, both in channel and in upland areas, to achieve overall recovery of the watershed. Road stabilization is a major component of upland work. Since 1990, new road construction and timber harvest have decreased significantly in the watershed (Nick Gerhardt, USFS, personal communication, 1999).

ISRP Comment/Question: Why does this particular reach of 4.4 miles represent a "bottleneck" to production in the watershed? Is this a priority area for this kind of investment?

Response: A detailed watershed assessment that targeted the restoration of the lower meadow as a priority did not exist prior to project initiation in 1994. However, several documented sources agree that the potential for high quality fish habitat exists within the Red River drainage and its meadow reaches, in particular.

For example, the Clearwater River Subbasin Salmon and Steelhead Production Plan (Nez Perce Tribe and Idaho Department of Fish and Game, 1990) was developed, as directed by the Northwest Power Planning Council (NWPPC, 1987). Each of the 31 subbasins in the Columbia River Basin were to establish strategies that, together, would achieve the Columbia Basin Fish and Wildlife Program's (NWPPC, 1987) goal of doubling salmon and steelhead production in the Columbia River. The recommended strategy for the Clearwater River Subbasin is comprised of several actions, including acquiring private lands to protect significant anadromous fish habitat and to implement habitat improvement projects to improve degraded conditions in the Red River drainage.

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Response: The sponsors use a "soft engineering" or natural river restoration philosophy that restores the natural physical and biological processes to return the stream to a state of dynamic equilibrium, minimizing the use of rigid, unnatural bank stabilizing structures and the need for future human intervention. A significant amount of coordination, communication, and cooperation between agencies, organizations, and consultants is necessary to interpret modeling scenarios, produce conceptual design alternatives, monitor and evaluate constructed phases, apply adaptive management to improve future designs, and disseminate information and experiences.

Recognizing that an accelerated recovery approach requires more planning and consensus-building, the ISWCD ensures that the focus remains on implementation by insisting that at least 50 percent of the total project cost MUST go 'into the ground' directly. The remaining costs fund the extensive TAC reviews, design modifications, monitoring, interpretative facilities and education/public outreach.

The project is based on applying an adaptive management strategy, rather than constructing a complete meadow of new meanders. Monitoring data from each phase has been used to refine the design for subsequent phases. The detailed monitoring program has allowed later phases of the project to be designed much closer to a condition of 'dynamic equilibrium.'

The project's in-channel work window is limited to six weeks per year to reduce disturbance to salmon and steelhead spawning and rearing activities. A high degree of coordination, effective planning, and efficient use of resources is key. A project becomes more expensive when only a short reach of river channel can be restored in any given field season.

Water quality standards must be upheld during construction requiring erosion control and suspended sediment mitigation procedures and continuous turbidity monitoring that provide immediate feedback to the construction crew on the effectiveness of their best management practices.

Intensive planting methods are necessary immediately after each new channel section is restored. Raw stream bank soils, exposed by reconstruction activities during the field season, are extremely vulnerable to the erosive forces of flood flows during the following spring. Both native seed and seedlings vegetation is planted immediately after restoration work to stabilize these raw soils. A limited amount of precipitation occurs in the summer months at lower Red River meadow requiring fertilization and irrigation to establish vigorous vegetative and root growth before the end of the growing season. These aggressive planting, fertilization, and irrigation practices are implemented only for a short time, immediately following construction during the first field season, and necessary to provide the highest degree of soil stabilization prior to the onset of the spring flood flows. In subsequent years, the native vegetation becomes self-sustaining as the channel reconstruction improves hydrologic conditions conducive to their survival.

There are relatively few projects of similar scope that attempt to increase sinuosity and stabilize the channel over an extended reach. Examples will be provided directly to NPPC. Additional examples can be provided from other regions or states but are highly variable and not directly comparable given different environmental and political constraints. For example, typical costs in California for restoration similar to ours can run as high as $1,000.00 per linear foot (Guinon, 1989).

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**Project: 9304000 Fifteenmile Creek Habitat Restoration Project (Request Multi-Year Funding)**
Sponsor: Oregon Department of Fish and Wildlife

CBFWA tier: 1
ISRP review: Fund for one year. Subsequent funding contingent on justification of the budget and correction of other shortcomings. Project's emphasis should be focused on identification of limiting factors and benefits to fish from past activities, less on the operation and maintenance.

ISRP Comment/Question Proposal strengths lie in the efforts of previous segments that constructed the various habitat improvement structures. However, the proposal still did not reference studies critical of the use of in-stream structures. (see Kauffman and Beschta, OSU; ISRP's FY99 report Appendix A, page 37).

Response: This report (which was not a study, but a report on a one-day site visit by Kaufman and Beschta) was referenced twice in the proposal; however, in one instance, the authors' names were inadvertently omitted. The project has taken into consideration much of what Kaufman and Beschta discussed during the site visit, as well as in the above-mentioned report. Because of their concerns, this project has not installed any instream fish habitat structures since that report was written. The project's implementation efforts since that time have centered on riparian fencing, providing off-stream watering sites for livestock, and working with the Soil and Water Conservation District and the Fifteenmile Creek Watershed Council to improve riparian areas and upland areas. At this time, the Fifteenmile Creek Habitat Restoration Project is primarily an operation and maintenance project, not an implementation project. The Project is bound by 15-year lease agreements with private landowners to maintain the habitat treatment measures that were implemented on their property under this project.

ISRP Comment/Question: The proposal did not give a clear explanation of how a watershed assessment or comprehensive habitat survey within the subbasin was used to prioritize restoration efforts.

Response: This was an inadvertent omission and failure by the author to clearly articulate how these plans were used in the implementation phase of the Fifteenmile Creek Habitat Restoration Project. In the Fifteenmile Creek Implementation Plan authored in 1986 by the Oregon Department of Fish and Wildlife, USDA Forest Service, and the Confederated Tribes of the Warm Springs Indian Reservation of Oregon. The factors limiting production within the Fifteenmile Creek Basin were clearly outlined. The primary limiting factors for winter steelhead in Fifteenmile Creek were found to be downstream and upstream passage problems at unscreened irrigation diversions; lack of summer rearing habitat due to high summer water temperatures; and lack of rearing pools since the channelization work following the 1964 flood. The Fifteenmile Creek Implementation Plan has been used as a guide for the implementation of habitat treatment measures that address these limiting factors. These measures included installing fish ladders at large irrigation diversions and screening of irrigation ditches and pumps; fencing to restore streamside vegetation and placement of instream habitat structures to provide rearing pools for juvenile steelhead. Other planning documents used in the implementation phase of the Fifteenmile Creek Project were the Fifteenmile Creek Subbasin Plan (September 1990); the Fifteenmile Creek Watershed Action Plan (July 1997), CRITFC; 1996 Wy-Kan-Ush-Mi-Wa-Kish-Wit; and The Columbia River Anadromous Fish Restoration Plan of The Nez Perce, Umatilla, Warm Springs, and the Yakama Tribes.

ISRP Comment/Question: The estimated improvement in smolt production was not adequately justified and seemed overly optimistic, especially because the assumed current smolt production potential is a lot more than the estimate given in proposal 9304001.

Response: The reason for the differences in the estimate in smolt production from the proposal for project #9304000 and proposal #9304001 is easily explained. In proposal 9304001, the estimate given was for out-migrating smolts for that year. In proposal 9304000, the estimate given was the estimated carrying capacity of the Fifteenmile Basin after the implementation phase of the Fifteenmile Creek Habitat Restoration Project.

ISRP Comment/Question: The objective to identify limiting factors (objective 2) – monitor stream temperatures and provide photo documentation – is monitoring, not limiting factor analysis.

Response: This was an error on the author's part. The goal of Objective 2 was to provide monitoring of completed habitat treatment measures within the Fifteenmile Creek Basin, not to identify environmental factors limiting

production of winter steelhead within the Fifteenmile Basin. The environmental factors limiting production were identified in the implementation plan and other planning documents. The author apologizes for any confusion this may have caused the readers.

ISRP Comment/Question: The authors will document the number of fish screens installed, habitat work done, etc. but what has this done for the fish?

Response: To date, there have been approximately 100 fish protection screens installed within the Fifteenmile Creek basin. This number represents both gravity and pump intakes. At this time, the sponsors are unable to provide any data as to the number of fish saved by these screens; however, it is assumed that by keeping fish in the stream, they will have a better chance of survival. Oregon Department of Fish and Wildlife intends to submit a FY2001 proposal to trap fish at each of the gravity diversions. All of the currently installed gravity fish screens in the Fifteenmile Basin are equipped with live trap wells; however, funds have not been available to conduct this work.

The Fifteenmile Creek Habitat Restoration Project has installed approximately 100 miles of riparian protection fence protecting 50 miles of stream. In addition to riparian protection fencing, the project has also installed approximately 1,000 instream fish habitat structures of various types. While it is difficult to quantify the benefits that have occurred for fish and wildlife as a result of the completed riparian and instream work in the basin, it is apparent in project photo-points that riparian vegetation has been greatly increased and many areas have developed complete canopy closure over the stream. The Oregon Department of Fish and Wildlife intends to submit an FY2001 proposal (probably in conjunction with Project #9304001) to monitor the effects of habitat treatment measures completed in the Fifteenmile Creek Basin

ISRP Comment/Question: Other weaknesses lie in the level of expense and the argument centered around whose responsibility is the maintenance of those same structures.

Response: Currently, the Oregon Department of Fish and Wildlife has 83 signed fifteen-year lease agreements with private landowners throughout the Fifteenmile Creek Basin. These leases are legal documents and are an encumbrance on the title of the property at the Wasco County Court house. The leases contain 15-year maintenance agreements in which ODFW agreed to provide all maintenance of riparian protection fences and instream structures. In 1986, when the majority of these lease agreements were signed, agreeing to maintenance of the improvements was the only way that many landowners would agree to the improvements. It was also at the insistence of BPA that long-term agreements be signed with the landowners. At the start of the project, BPA insisted on 99-year lease agreements in which the project would be responsible for maintenance of improvements. After concern from the landowners, the term of the lease was reduced to 15 years. Cancellation of these lease agreements before the expiration date would increase the risk of losing landowner cooperation; however, any new agreements the project enters into in the future will require the landowner to take responsibility for the maintenance of habitat improvements. This approach has become possible in recent years as landowners have viewed successful habitat projects on neighboring properties.

ISRP Comment/Question: The need for continuing the work is explained, but the budget is staggering for what the authors propose to do.

Response: To maintain 100 miles of riparian protection fence, including some 150 livestock watering locations, approximately 1,000 instream habitat structures, and six off-site solar powered water developments, and perform needed monitoring activities is not without expense. The proposed budget is similar to other fish habitat restoration projects in the Northwest. When reviewing the budget for this project it is important to consider the amount of riparian fence that is being maintained and especially the high number of stream crossings. This project is somewhat unique compared to other Central and Eastern Oregon projects in that there are many more landowners per mile of stream. As an example, the Trout Creek Project has leases with 21 landowners maintaining fence protecting approximately 70 miles of stream. The Fifteenmile Creek Project currently has 83 landowner leases protecting approximately 53 miles of stream. This greater density of land ownership requires many more stream crossings and many extra livestock water gaps or off-stream water developments.

ISRP Comment/Question: The validity of the warning in boldface type as to the dire consequences of failing to fund this proposal is unclear. How much of the doomsday scenario is true?

Response: The boldface type was meant only to bring attention to the reviewers of what could be lost or compromised if the project were not funded. There have been examples during previous years when O & M funding was inadequate to properly maintain riparian fences when a few cows in an enclosed riparian area for a week have set back the vegetative recovery of streambanks by 3-5 years.

**Project: 9306000 Select Area Fishery Evaluation Project**
Sponsor: Oregon Dept. of Fish & Wildlife, Washington Dept. of Fish & Wildlife, Clatsop County Economic Development Council

CBFWA tier: 1
ISRP review: Fund for one year with medium priority. Subsequent funding contingent on an extensive programmatic performance review of the project.

ISRP Comment/Question: One of the project's strongest elements is the collaborative effort (with NMFS) to develop a more natural rearing regime and increase the quality of smolts released. So long as this project continues to maintain separation from natural stocks, it will represent a valid use of hatchery fish.

Response: The SAFE Project goal is consistent with the Northwest Power Planning Council's recommendation that terminal fishing sites be identified and developed to harvest abundant fish stocks while minimizing the incidental harvest of weak stocks. Select area fisheries are being explored as a means to increase the sport and commercial harvest of hatchery fish while providing greater protection of weak wild salmon stocks.

The SAFE Project has been successful in expanding Youngs Bay fisheries, and creating new fisheries in the Tongue Point basin, Blind Slough, and Deep River. These fisheries have been successful in providing maximum harvest of target stocks, minimizing straying rates, and minimally impacting weak and listed stocks.

ISRP Comment/Question: Use of winter dormancy and accelerated spring feeding appear promising, though it will be some time before results are realized from this experiment.

Response: The ISRP is correct in stating that results take some time before being realized. The most vital source of information, the coded-wire tag, is delayed over a year following a given year's fishery, which occurs no less than two years following the release of a given brood year of salmon.

ISRP Comment/Question: Is the monthly schedule for water quality sampling adequate to address temporal variations? Details of monitoring techniques are sketchy.

Response: The water quality-monitoring program was initiated, over a year before the placement of pens at each site, with the guidance of the Washington Department of Ecology. It was designed to prevent errors from occurring during the evaluation phase of the project. Water chemistry monitoring involves monthly 24-hour recording of conditions at each pen site to establish a database for evaluation of when and to what degree specific waters are favorable for rearing. Macroinvertebrate sampling occurs before, during and after each 6-month long rearing season, and is essential for determining whether that site is an environmental liability. The program is considerably more than specified by any agency and is a major guide for determining the direction of rearing at each site.

ISRP Comment/Question: Given so many experimental variables (smolt size/condition, rearing density, release time and date, etc.), different fish species and uncontrolled environmental conditions, the question arises whether adequate tests have been developed to statistically account for them all in evaluating results.

Response: Variability in rearing conditions (smolt size/condition, rearing density, release time and date, etc.), different fish species and uncontrolled environmental conditions are factors needed to determine the feasibility and magnitude of the program, but it should be stressed that the intent is to put standard hatchery practices to work. For these issues, in particular, there may be a misunderstanding of project design. The intent is not to produce new experimental net-pen rearing results, but rather to develop fisheries through application of results from experimental net-pen rearing.

**Project: 9306200 Salmon River Anadromous Fish Passage Enhancement**
Sponsor: Lemhi and Custer Soil and Water Conservation Districts

CBFWA tier: 1
ISRP review: Fund for one year. Subsequent funding contingent on a performance audit of these three proposal, 9202603, 9401700, and 9306200, to determine if the results are benefiting fish and wildlife in a cost effective manner. The proposals should be consolidated into one proposal with better described methods for selecting and prioritizing restoration efforts and for monitoring and evaluation. They also need a timeline for termination.

ISRP Comment/Question: Fund for one year. Subsequent funding contingent on a performance audit of these three proposal, 9202603, 9401700, and 9306200, to determine if the results are benefiting fish and wildlife in a cost effective manner.

Response: The Model Watershed Staff has prepared the following responses to the above comments. The comments and criticisms are valuable and beneficial in ongoing efforts to provide the highest quality proposals within the identified process constraints. Responses apply collectively to the projects listed above.

ISRP Comment/Question: The proposals should be consolidated into one proposal with better described methods for selecting and prioritizing restoration efforts and for monitoring and evaluation. The short description of this project is identical to that of 9401700.

Response: The three proposals should remain separate to maximize the involvement at the state level for proposal 9202603, which is sponsored by the Idaho Soil Conservation Commission. Project 9202603 is an administrative budget that insures coordination and cooperation between community members and state and federal entities by providing a centralized location, computers and funding for information and education. Project proposals 9401700 and 9306200 are administered by local Soil and Water Conservation District board and go directly into on the ground projects and include salary for a project planner/implementor.

Model Watershed priorities are clearly outlined in the Model Watershed Plan, by river reach. Opportunities to implement are directly tied to landowner cooperation and willingness. Due to the constraints of proposal submission, the complete monitoring plan could not be included, however an historical account of track record was provided, which displays accomplishments over time.

ISRP Comment/Question: They also need a timeline for termination.

Response: The initial starting point for the Model Watershed Plan (1995) was addressing mainstem habitat and passage problems within the Lemhi, Pahsimeroi, and East Fork subwatersheds. Many projects emerged from this initial effort and many others came forward with the early momentum. As the MWP has built trust and credibility the need to update our planning documents and possibly expand our boundaries to the entire Upper Salmon River Basin.

ISRP Comment/Question: Little biological monitoring is identified, and the methods for it are inadequately described.

Response: The biological component relates to improved fisheries habitat and improved riparian vegetation habitats. The Model Watershed project cooperates with and helps the Idaho Department of Fish and Game collect fisheries data (redd counts, PAR densities, stream habitat evaluations and water temperature) and will analyze this data. The Model Watershed Technical team will review this information on a semi-annual basis and prioritize projects based on the latest information collected.

ISRP Comment/Question: While the model watershed program is doing important work that is gaining momentum in the community, a performance audit might result in some tightening of the program and its budget.

Response: The Idaho Model Watershed Project welcomes the suggestion and concept of a performance audit and recommends the weeks of August 16 to 20th or 23 thru 27th, 1999.

**Project: 9306600 Oregon Fish Screening Project - Fy'00 Proposal**
Sponsor: Oregon Department of Fish and Wildlife

CBFWA tier: 1
ISRP review: Delay funding until the authors provide methods for determining priority of screen placement (or replacement) and monitoring of effectiveness. (medium priority)

ISRP Comment/Question: Objectives as presented here are somewhat too general. For example, they neglect to mention criteria/priorities to determine screen placement and do not adequately describe evaluation methods used to determine fish screen efficiency.

Response: During the mid 1990's NMFS (1997) established revised design criteria for all fish screen devices under the Mitchell Act. These criteria are designed to provide adequate protection of all salmonids during all life stages and have been adopted by US Fish and Wildlife Service for resident fish species. Of the 91 screens located in salmon spawning and rearing areas in the basin, only 43 meet NMFS criteria.

The ODFW John Day District Fish Biologist and Fish Passage Manager established the scheduling and priorities for placement of screening devices within the John Day basin. The first priority for consideration was absence or presence of fish and what fish species were present. The second priority was the current condition of the existing fish screen and structure and whether or not it met NMFS standards. The third priority was the frequency of use during the 6-month irrigation season.

Long range prioritization listing for the John Day basin fish screening replacement project is scheduled as follows: Replace all existing fish screens located within the upper Mainstem and Middle Fork that support Chinook salmon, bulltrout, and westslope cutthroat spawning and rearing areas. Continue down-stream replacing fish screens located on tributaries within John Day Mainstem, Middle Fork, and South Fork that support steelhead spawning and rearing areas. Replace all mainstem fish screens where adult and smolt migrations occur at locations within the Mainstem John Day, Middle Fork, and South Fork subbasins.

ISRP Comment/Question: Priority listing criteria relative to expected increases in survival should be described.

Response: The John Day basin fish screen upgrading and replacement program in the upper mainstem and middle fork headwaters are of the highest priority. The greatest populations and concentrations of spring chinook and summer steelhead occur in these waters from Canyon Creek, at John Day (RM 248), up to the headwaters above Blue Mountain Hot Springs (RM 276) on the mainstem, and from Big Creek (RM 39) upstream to Phipps Meadows (RM 71) on the Middle Fork (Jonasson et al., 1999). The spawning and rearing habitat on the North Fork of the John Day River is located primarily within the North Fork Wilderness Area where no water is diverted for irrigation in its upper reaches. The water used for irrigation downstream from the Wilderness Area utilizes primarily sprinkler systems. Upon completion of screen placement in the upper reaches of the Mainstem and Middle Fork, screen upgrading and replacement will then be directed to the tributaries in the upper reaches and continue downstream.

The majority of existing fish screening devices located in these upper reaches of the Middle Fork and Mainstem were first constructed during the early 1950's and have since deteriorated due to age and are obsolete by NMFS standards. Adequate protection of emergents and fry with older screen systems had very high percentages of fish loss that were quantified by Eddy (1998). Expected increased survival of fish with screening devices constructed to NMFS standards that are properly operated and maintained will protect all life stages of fish from injury and mortality in the 90-99% range (Blanton et al. 1998).

Columbia River Basin projects similar to the Oregon fish screening project are ongoing in Idaho (Project No. 9401500) and Washington (Project No. 9105700). These three projects compliment one another by providing protection for depressed salmon and steelhead populations throughout the entire basin. Within the John Day sub-basin, 79 of the 91 fish screens determined as the highest priority, are located within or immediately adjacent to

ODFW's BPA habitat improvement Project # 8402100. The John Day fish passage program and the habitat program are headquartered in the same facility. The primary goal of both programs is the same; to improve habitat for the increased survival of anadromous and resident fish species within spawning and rearing areas located in the sub-basin. Both programs work in cooperation with local watershed council efforts to help meet BPA, Northwest Power Planning Council, Oregon Plan, and Oregon Legislative recovery goals.

Expected increases in survival rates are difficult to pin point due to the varying degree of efficiency of the existing structures. However, past evaluations of fish screen #6-221 located on Beech Creek, a tributary containing steelhead, has indicated high levels of increased survival rates.

(Example)
Fish screen #6-221 was originally installed in 1962 and was operated with a fish bypass trapping facility until 1992 when the system was completely replaced with a new fish screen meeting NMFS criteria and a bypass fish trapping facility.

Trap Data – (May through Aug.)

| | | |
|---|---|---|
| 1991 | Old System | Trapped 121 salmonid fish in four months |
| 1992 | New System | Trapped 3,236 salmonid fish in four months |

Knowing that this comparison may have several other factors that could have affected the differences associated with the high number of fish trapped in 1992 compared to 1991, additional evaluations were conducted by electro-shocking behind the systems. The old system was operated for three days and then the new system was operated for three days. Evaluations found large numbers of fry behind the screen, when the old system operated. No fish were found behind the new system. The method used consisted of netting off 100-yard sections and electro-shocking each section.

ISRP Comment/Question: Further, there is inadequate description of methodology used for the Trout Creek fishway project in this proposal.

Response: In the Trout Creek system of the Deschutes basin there are currently 16-gravel push up dams that are used for irrigation in the mainstem of Trout Creek. These dams are typically constructed with the use of crawler tractors in the stream between February and May. These berms either prevent or delay adult and juvenile passage. When they are constructed immediately after spawning there is a great deal of disturbance to steelhead redds. The installation of push up dams also creates disturbance to streambanks and riparian vegetation.

Methodology for prioritizing sites was a mixture of biology and local politics. The diversion/ladder structures are being constructed at sites that will provide the best benefits for fish passage and where there is cooperation of the private landowner. Of the 16 gravel push-ups, 10 are constructed in a way that eliminates, or severely restricts, fish passage depending on how soon in the spring they are constructed. These 10 structures range from 4 to 6 feet high. The other six gravel push up sites do not prevent adult steelhead passage, but do create some passage problems for juveniles, especially for those juvenile steelhead that attempt to migrate upstream to avoid warm water temperatures in the lower reaches of Trout Creek. These structures also cause some localized disturbance to the stream gravel and vegetation. However, this is minor in comparison to the other 10 sites. Therefore, these six sites were placed at the bottom of the replacement priority list.

The goal is to replace all of the high priority (12 total before this project started) gravel push up dams with permanent diversion/fish ladder structures where feasible. Due to the limited length of the in-water work period the project is able to construct one structure per year. The first structure was installed in 1997. This structure has proven successful for fish passage as well as providing an easier and more efficient method of water withdrawal for the landowner. These structures are designed to be easily removed at the end of the irrigation season which provides for improved passage as well as passage of debris in high flow events. The National Marine Fisheries Service for fish passage has approved this structure design.

Sites to be constructed in 1999 were chosen that will enable consolidation of two high priority diversion sites into one structure, thereby eliminating one diversion site altogether. An attempt to consolidate other diversions in the

future will be made in an effort to minimize the number of irrigation diversion structures that fish will have to negotiate.

The elimination of the annual installation of gravel push up dams will benefit fish by eliminating the habitat damage and disturbance to the area surrounding these structures and by providing improved fish passage.

ISRP Comment/Question: More specific information is needed on juvenile mortality associated with out dated or poorly operating screens (relative to NMFS designed screens that are properly maintained).

Response: The John Day basin supports a wild population of natural producing Chinook salmon and summer steelhead; there is no hatchery supplementation in the basin. Summer steelhead produced in the basin contribute to sport fisheries in the John Day and Columbia River basins, they also contribute to the Indian Treaty Harvest in the Columbia River. In an effort to provide protection for these fish, screening devices were implemented within the John Day basin. These screening devices date back to 1952 when the funding for these projects was established under the Mitchell Act. Under Mitchell Act funding ODFW implemented over 550 fish screening devices within the basin through the early 1950's, 60's and 70's. The current program operates annually with over 300 existing fish screening devices. This reduction in fish screening devices can be attributed to users who once flood irrigated but have changed to sprinkler systems. The program only implements screening devices on legal water diversions.

The original fish screening devices were designed to protect only salmon smolts. This creates concern when approximately eighty percent of the fish screening devices in the John Day basin are located in spawning and rearing areas for native salmon and steelhead. Other species such as bull trout, westslope cutthroat, redband trout, brook lamprey and pacific lamprey occupy the same habitat (Claire et al., 1997). Three of the five indigenous salmonids are either proposed for listing or are listed under the Endangered Species Act. Bull trout and summer steelhead are listed as threatened and westslope cutthroat are proposed for listing. Additionally, Pacific lamprey are a category 2 species on the Federal List and a Sensitive Species on the State of Oregon Endangered Species List.

Evaluation, research and testing of the latest screen designs conducted by various agencies confirmed several areas of deficiency in older models. Insufficient bypass orifice and pipe sizes on outdated screens did not allow for fish to be safely and quickly transported back to the stream (Abernathy et al. 1995). Placement of the fish screening devices too close to the point of diversion and set perpendicular to the stream resulted in excessive approach velocities and low surface-sweeping velocities causing fish impingement on the drum (Abernathy et al. 1988). Mesh sizes of one-quarter and one-eighth inch were too large allowing for emergent fish to pass through the mesh and become entrained (Bates and Fuller, 1992). These obsolete design criteria account for 245 of 314 screens that operate annually in the John Day basin.

Out of the 314 fish screening devices that operate annually within the John Day basin, only 67 meet the current criteria guidelines set by NMFS for fish protection. Presently 91 fish screens are located in salmon spawning and rearing areas. Out of the 67 current NMFS criteria fish screens, 43 are located in salmon spawning and rearing areas.

When new NMFS criteria fish screening devices are operated to specification, they are 97% to 100 % effective in providing fish protection. Out-dated fish screens vary in efficiency from 10% to 60% depending on the screens condition and location. (Efficiency evaluation was conducted by ODFW through the operation of new and old systems, and then Electro shocking behind the fish screening device; evaluation conducted at location 6-221, in 1992).

ISRP Comment/Question: With this information, the cost effectiveness of the projects could be better assessed and prioritization schemes could be better evaluated.

Response: Cost effectiveness in relation to fish protection of each new structure is difficult to determine. The operational longevity of each new system is not known. The design, materials and knowledge incorporated into each new system exceeds its predecessors. The majority of the original fish screens that were installed in the early to late 1950's still is in operation and provides some level of fish protection. The efficiency level of NMFS criteria screens for fish protection far exceeds the old systems by protecting 90-99% of salmonids at all life stages.

(Example)
Rotary Fish Screen #6-018 located on the upper mainstem;
Installed in 1958 with a fish bypass trapping unit;
Past trapping records from 1958 though 1998, 40 years in operation
Total Salmonids trapped - 53,075 fish;
Efficiency increase NMFS system estimate 53,075 x 40% new system = 21,230 increase = total 74,305 fish;

John Day Screening Program salmonid fish protection estimates

(Example)
Each fish screen protects 50,000 fish in 40 years;
300 fish screens in operation;
300 x 50,000 = Total fish protected 15,000,000;
New NMFS criteria fish screen 40% average increase in efficiency;
15,000,000 x 40% = 6,000,000 Total fish protected in 40 years with current criteria NMFS fish screen = 21,000,000;

ISRP Comment/Question: The proposal should explain in detail and offer some provisions for delays. It should also describe possible contingencies and a time–line.

Response: Project delays often occur due to the irrigation period that coincides with the field construction work period. Adverse weather conditions often limit accessibility to the construction site. Landowner cooperation and negotiation conflicts occasionally delay implementation. If a delay were to occur, resources would shift to an alternate screen until the delay is resolved. The original priority list has changed because some of those screens have already been replaced and because of landowners' willingness to participate (Moulton, 1999). For the 245 screens in need of replacement in the John Day basin, 48 are located in high priority areas, foreseeing limited problems in scheduling, construction, and completion of attaining the goal of 20 to 25 screens in FY00.

ISRP Comment/Question: Several statements in the proposal are unclear:
Proposed fish screens are in the vicinity of improved habitat projects. How near? And is this siting by design or otherwise?

Response: Of the 91 fish screens determined as the highest priority, 79 are located directly within the ODFW, BPA habitat improvement projects. The John Day fish passage program and the habitat improvement program headquarters are located in the same facility. Both programs work in unison while providing protection and habitat improvements within the same priority locations. The priorities for both programs are the same, to increase the survival of anadromous and resident fish species while they inhabit spawning and rearing areas.

Siting for the placement of fish screening devices are based upon: historic spawning and rearing areas within the John Day River basin; thirty-nine years of steelhead spawning ground surveys; forty-year summary of Chinook salmon spawning densities (John Day Basin Spring Chinook Salmon Escapement and Productivity Monitoring Annual Progress Report – Project Number 98-016-00); Integrated System Plan for Salmon and Steelhead Production in the Columbia River Basin, June 1, 1991; Summer Steelhead-Mid Columbia-Status of Stock pg. 88; and the Mid-Columbia Spring Chinook status of stock pg. 39.

ISRP Comment/Question: There is no correlation cited between stream productivity and areas proposed for screening.

Response: Priority fish screening areas are located within the only two sub-basins that support native spring Chinook salmon spawning and rearing areas in the John Day basin. The highest concentration of bulltrout and westslope cutthroat also reside in both sub-basins. Annual index spawning ground surveys are conducted annually by ODFW staff within both priority-listed sub-basins. Forty-year summary of Chinook salmon spawning density from 1959 to 1998 within the John Day District, Mainstem, Middle Fork, North Fork, Bull Run Creek, Clear Creek, and Granite Creek specify that during this time period 2,864 individual redds have been identified. The highest redds per mile was in 1962 with 22.2. A current survey conducted in 1998 average 8.6 redds per mile.

ISRP Comment/Question: The proposal should provide estimates of the number of fish lost to irrigation diversions in the area and compare those numbers to other basins, to indicate the relative importance of this effort.

Response: Fish mortalities associated with outdated poorly operating fish screening devices within the John Day basin is very difficult to quantify due to the vast number of systems and the varying degree of problems per system. However, there are several factors that attribute to high fish mortalities associated with fish screen design and operating techniques. Outdated fish screens and design limitations provide virtually no protection for fish smaller than fry stage.

Juvenile Mortality: Within the John Day Basin fish screening program none of the old outdated systems meet any of the criteria requirements for fish protection established by NMFS. All existing systems have excessive approach velocities that cause contact and impingement of emerging and juvenile fish. NMFS requires the approach velocity to not exceed .4 feet per second. The majority of existing outdated structures exceed 1.0 fps (ODFW random sample of 30 fish screens, 1992). All outdated fish screening devices within the basin have either 1/8" or ¼" square mesh on the screen drum. A diagonal measurement of a square opening on the mesh increases the size of the opening beyond 1/8"or ¼." NMFS criteria require no more than 1/8" opening for smolts and no more than 3/32" opening in spawning and rearing areas. This measurement is not to exceed the specifications at any angle. When openings exceed this measurement emerging fish pass through the drum. This becomes very critical to fish survival within spawning and rearing areas. NMFS criteria require all fish return bypass pipes to be ten inches in diameter, with a minimum of a six-inch orifice. This six-inch orifice and ten-inch pipe allows passage for all age classes of fish, including adults. All outdated fish screening devices within the basin have a two-inch orifice with a four to six inch bypass pipe. All fish screen drums wider than five feet require drums to be on a 45 to 60 degree angle, perpendicular to the diversion. This angle creates a sweeping velocity component that directs fish to the bypass pipe and prevents drum contact and impingement. All outdated fish screening devices within the John Day basin have screen drums on a 90-degree angle (perpendicular to flow).

Irrigation Fish Mortality – Fish loss in irrigation diversions within the John Day basin would be very high without fish screening devices. Each fish screen is not monitored and evaluated making it difficult to know how many fish are lost at each site. Although, by using fish screening devices within the priority area that operate with a fish bypass-trapping unit a base for estimates can be accomplished.

(Example)
Trap Data screen #6-221 –(May through Aug)

| | | |
|---|---|---|
| 1991 | Outdated screen system | Trapped 121 salmonids |
| 1992 | New NMFS approved screen system | Trapped 3,236 salmonids |

ISRP Comment/Question: The benefits of previous screening are not reported.

Response: By combining past trap data and averaging the number of out-dated fish screens within the basin, the average number of fish saved by each system equals approximately 1,200. NMFS criteria replacement projects are estimated to operate at a 40% increase in fish protection efficiency, this would increase the fish protection of each new system by 480 fish per season. If funding allowed twenty-five projects to be completed in a season this would save 12,000 additional salmonids per season.

ISRP Comment/Question: There is inadequate description of methodology used for the Trout Creek Fishway project in this proposal.

Response: In the Trout Creek system there are currently 16-gravel push up dams that are used for irrigation in the mainstem of Trout Creek. These dams are typically constructed with the use of crawler tractors in the stream usually between February and May. These berms either prevent or delay adult and juvenile passage. When they are constructed immediately after spawning there is a great deal of disturbance to steelhead redds. The installation of push up dams also creates disturbance to streambanks and riparian vegetation.

Methodology for prioritizing sites was a mixture of biology and local politics. The diversion/ladder structures are being constructed at sites that will provide the best benefits for fish passage and where the cooperation of the private landowner is given. Of the 16 gravel push-ups, 10 are constructed in a way that eliminates, or severely restricts, fish

passage depending on how soon in the spring they are constructed. These 10 structures range from 4 to 6 feet high. The other 6-gravel push up sites do not prevent adult steelhead passage, but do create some passage problems for juveniles, especially for those juvenile steelhead that attempt to migrate upstream to avoid warm water temperatures in the lower reaches of Trout Creek. These structures also cause some localized disturbance to the stream gravel and vegetation; however, this is minor in comparison to the other 10 sites. Therefore, these six sites were placed at the bottom of the replacement priority list.

Our goal is to replace all of the high priority (12 total before this project started) gravel push up dams with permanent diversion/fish ladder structures where feasible. Due to the limited length of the in-water work period the project is able to construct one structure per year. Installing the first structure in 1997. This structure has proved successful for fish passage as well as providing an easier and more efficient method of water withdrawal for the landowner. These structures are designed whereas the dam portion of the structure is easily removed at the end of the irrigation season which provides for improved passage as well as passage of debris in high flow events. The National Marine Fisheries Service for fish passage has approved this structure design.

For sites to be constructed in 1999, sites have been chosen that will enable us to consolidate two of our high priority diversion sites into one structure thereby eliminating one diversion site altogether. An attempt will be made to consolidate other diversions in the future in an effort to minimize the number of irrigation diversion structures that fish will have to negotiate.

The elimination of the annual installation of gravel push up dams will benefit fish by eliminating the habitat damage and disturbance to the area surrounding these structures and by providing improved fish passage.

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**Project: 9401001 Mitigation For Excessive Drawdowns At Libby Reservoir**
Sponsor: Montana Fish, Wildlife and Parks and the Confederated Salish and Kootenai Tribes

CBFWA tier: 1
ISRP review: Do not fund. The work is indistinguishable from 8346700, the work should be related to reservoir operations, and there are indications that the proposed work is not scientifically sound.

ISRP Comments/Question: This proposal is under the Kootenai R./Libby Dam umbrella, but it is not clear why it continues as a separate project. As the ISRP identified last year, this project could be integrated with other Libby Dam mitigation work.

Response: According to the wishes of the ISRP assessment last year, the Libby Mitigation projects have been combined via the umbrella proposal. Since receiving this instruction from the ISRP, the project sponsor gained the support for combining the projects from the CBFWA resident fish managers and BPA. The combined budgets from the subproposals are needed to achieve the overall goals of the umbrella proposal.

ISRP Comments/Question: There is little distinction in the work (or proposal) from other projects. It would be better for this as a stand-alone proposal to have some work specifically tagged to the excessive drawdowns.

Response: This project is no longer a stand-alone project. The history of this subproposal is pertinent to our response. Originally, this project was funded separately from the FWP by BPA power supply in response to language in the FWP which instructs BPA to fund mitigation for fisheries losses caused by excessive reservoir drawdowns for power production (drawdowns in excess of the 90 to 110 foot drawdown limit stated in the FWP). Later, BPA included a clause in the contract with Montana to discontinue funding from power supply and pursue additional funding from the FWP. Montana decided to sign the final contract with power supply, and pursue continued funding from the FWP, rather than not fund the necessary mitigation.

Mitigation of fisheries losses caused by excessive drawdowns is problematic. Onsite mitigation is limited to actions such as reconfiguring dam operation and assuring passage of migrating fish from the reservoir to the surrounding tributaries. Habitat improvements, monitoring of fish populations and experimentation with remote site incubators can also be used to reduce negative impacts due to excessive reservoir drawdowns. A portion of the umbrella project (formerly the Libby Technical Analysis project) is performing research and modeling to reconfigure dam operation. The result has been the development of Integrated Rule Curves (IRCs) for Libby Dam operation and the "Tiered Flow Approach" for augmenting flows for the recovery of the endangered Kootenai River white sturgeon. Another aspect of the umbrella project is experimenting with reestablishing wild runs using remote site incubators, fish passage improvements and habitat restoration. By combining the excessive drawdown mitigation with the overall mitigation project, the overall actions of the umbrella project were complimentary and made more efficient.

**Project: 9401002 Flathead River Native Species Project (MFWP Sub-proposal)**
Sponsor: Montana Department of Fish, Wildlife and Parks

CBFWA tier: 1
ISRP review: Fund (low priority). Review next year for a better description of hypotheses and experimental design. Project should be included in a general site review of all sub-basin projects.

ISRP Comment/Question: No hypotheses or science questions are articulated. Technically, there is little in the way of a clear hypothesis-testing scheme and a need to distinguish between occupied and preferred habitats.

Response: A modified Instream Flow Incremental Methodology (IFIM) will be used to assess available physical habitat and fish habitat use relative to changes in river discharge for native fishes inhabiting the Flathead River in Montana. Species habitat suitability criteria curves are required for the IFIM analysis. Snorkeling, SCUBA and radio-telemetry will be used to develop micro- and macro-habitat suitability curves for life stages of westslope cutthroat trout (WCT), bull trout, and mountain whitefish in three reaches of the Flathead River downstream of Hungry Horse Dam. The Flathead River will be stratified into three reaches based on changes in geomorphology (i.e. entrenchment, gradient, substrate, channel form). Surveys will be conducted randomly in each reach in order to

gain a representative sample of fish in each reach. A total of 150 independent observations for each species and size class will be targeted for each stream reach.

Microhabitat - Suitability functions for each species and life stage will be developed by fitting polynomial regression models to frequency distributions for depth, velocity, and cover. The null hypothesis is that there is no significant trend in microhabitat use of depth, velocity, cover, and substrate. A MANOVA will be used to test the null hypotheses that microhabitat use, by size-class and species, is the same as random availability and that microhabitat use is the same among species and size-classes. Jacobs' electivity index (1974) will be used to portray microhabitat selection (or preference) for total depth, mean velocity, substrate and cover. Possible values of this index range from +1 to -1 where: +1 indicates exclusive use in a defined category, 0 indicates habitat use in proportion to availability, and -1 indicates avoidance of the microhabitat category. A chi-square goodness of fit test will be used to test the null hypothesis that each species and size-class use cover in proportion to availability. A MANOVA will also be used with a canonical analysis test to test the null hypothesis that all microhabitat variables influence fish habitat use the same. This will allow "weighting" of each variable to identify which variables are driving habitat use for each species and size-class in each reach.

Macrohabitat- Chi-square goodness of fit tests will be used to test the null hypothesis that habitat use, by species and size-class, is in proportion to the availability of a particular habitat type (i.e. pools, riffles, runs). Expected values will be calculated as the total proportional area sampled in each habitat type multiplied by the total counts of each size class. Observed habitat use will be the total number of fish in that particular habitat type. Bonferroni confidence intervals will be constructed to determine if each species, by size-class, were selecting, avoiding or using habitat types as expected.

ISRP Comment/Question: There is no mention of work on northern pike in the review of achievements, but there is on the northern squawfish. Is this work on the northern pikeminnow (aka northern squawfish?).

Response: Yes. This work was conducted on northern pikeminnow, not northern pike.

ISRP Comment/Question: Objective 3: How will monitoring native fish distributions measure interaction strength among species? This does not follow necessarily and the logic is not presented in the methods section. The presence of overlap does not necessarily suggest competition nor does complete habitat segregation. These may suggest something about predator-prey encounter rates. How will the dietary habits of species by location be integrated with the radio-tagging data?

Response: Monitoring fish distributions and micro- and macro-habitat use will identify specific habitat characteristics (micro and macro) and stream reaches (e.g. channel forms) preferred by each target species and size-class. Coexistence of native and introduced fishes in the Flathead River likely depends on partitioning resources such as microhabitat food and space. Therefore, under the assumptions of resource partitioning, members of each group should use a unique subset from the available resource pool (arising from both interactive and selective processes). The sampling design will identify microhabitat interactions. In addition, radio-telemetry data will be used to identify the spatial and temporal distribution of target fish in the Flathead River. Location information will identify areas in the river that these species overlap as related to flow, temperature, habitat type and channel form. Furthermore, dietary information from fish captured for radio-tagging efforts will be collected. Hoop nets will be deployed throughout each reach (by season) and stomach contents will be extracted from captured fish. This information will identify seasonal predator-prey interactions in each stream reach. This comprehensive sampling design will enable assessment of the seasonal distribution (macrohabitat), resource partitioning (microhabitat), and predator-prey interactions of target species in the Flathead River.

ISRP Comment/Question: Objective 5: How will overlap in spawning sites indicate the level of hybridization between rainbows and cutthroats? Would DNA probes or microsatellites of captured juveniles near those spawning grounds give better information?

Response: Overlap in spawning sites will identify areas (e.g. reaches or streams) in the Flathead River system that rainbow and cutthroat trout potentially hybridize. Once these areas are identified, we will collect juveniles near the spawning grounds and perform mitochondrial DNA analyses, in cooperation with the University of Montana, to determine the level of hybridization in each area.

ISRP Comment/Question: It is unclear when the proposers are going to put the IFIM model together. Will it really take until 2003 to complete the job?

Response: Miller and Associates (Fort Collins, CO) will put the IFIM model together in 2002. Miller and Associates propose that in 2002 they will complete the PHABSIM and two-dimensional hydraulic modeling, a draft and final report, and refine the linkages between the physical models and the GIS mode. The schedule takes into account the budgeting limitations of the project and organizes data collection in a sequential fashion based on budgetary constraints.

ISRP Comment/Question: Some effort should be made to follow a subset of each species through a 24-hour cycle to adequately capture typical time/energy budgets.

Response: This is a very good suggestion and it will be incorporated it into the sampling schedule. In addition to time/energy budgets, diel tracking surveys will determine if habitat use changes from day to night. This information will be critical for flow recommendations at Hungry Horse Dam.

**Project: 9401700 Idaho Model Watershed Habitat Projects**
Sponsor: Lemhi and Custer Soil and Water Conservation Districts

CBFWA tier: 1
ISRP review: Fund for one year. Subsequent funding contingent on a performance audit of these three proposal, 9202603, 9401700, and 9306200, to determine if the results are benefiting fish and wildlife in a cost effective manner. The proposals should be consolidated into one proposal with better described methods for selecting and prioritizing restoration efforts and for monitoring and evaluation. They also need a timeline for termination.

ISRP Comment/Question: Fund for one year. Subsequent funding contingent on a performance audit of these three proposals, 9202603, 9401700, and 9306200, to determine if the results are benefiting fish and wildlife in a cost effective manner.

Response: The Model Watershed Staff has prepared the following responses to the above comments. The comments and criticisms are valuable and beneficial in ongoing efforts to provide the highest quality proposals within the identified process constraints. Responses apply collectively to the projects listed above.

ISRP Comment/Question: The proposals should be consolidated into one proposal with better described methods for selecting and prioritizing restoration efforts and for monitoring and evaluation. This proposal, along with 9401700 and 9306200, list exactly the same accomplishments, since 1993! Most of the narrative portions of all three proposals are also identical. Because of this, the three proposals either need to be combined into a single proposal, or two of the three should be discontinued.

Response: The three proposals should remain separate to maximize the involvement at the state level for proposal 9202603, which is sponsored by the Idaho Soil Conservation Commission. This is an administrative budget that insures coordination and cooperation between community members and state and federal entities by providing a centralized location, computers and funding for information and education. Proposals 9401700 and 9306200, which are project proposals, are administered by local Soil and Water Conservation District boards and go directly into on the ground projects and include salary for a project planner/implementor.

Model Watershed priorities are clearly outlined in the Model Watershed Plan, by river reach. Opportunities to implement are directly tied to landowner cooperation and willingness. Due to the constraints of proposal submission, the complete monitoring plan could not be included, however an historical account of track record was provided, which displays accomplishments over time.

ISRP Comment/Question: They also need a timeline for termination.

Response: The initial starting point for the Model Watershed Plan (1995) was addressing mainstem habitat and passage problems within the Lemhi, Pahsimeroi, and East Fork subwatersheds. Many projects emerged from this

initial effort and many others came forward with the early momentum. As the MWP has built trust and credibility the need to update the planning documents and possibly expand our boundaries to the entire Upper Salmon River Basin.

ISRP Comment/Question: The proposal pays mentions “holistic” watershed management, but doesn’t detail describe in detail how the concept plays enters into its objectives or tasks.

Response: Where the Model Watershed Project works primarily on private land, our individual projects focus on improving each landowners operation (including public land operations), striving to meet Model Watershed objectives across the landscape.

ISRP Comment/Question: The proposal fails to describe US Forest Service and other federal management in the watershed.

Response: Both the US Forest Service and the BLM work in concert with the Model Watershed on public and private lands, and personnel from each agency participate on both the Model Watershed Technical teams and the Advisory Committee. 90% of the federally managed streams on the Lemhi and East fork fall into the category of PFC (properly functioning condition) or properly functioning at risk with an upward trend.

ISRP Comment/Question: The planned “watershed plan update” ($10,000) is undefined.

Response: The Model Watershed Plan needs to be amended (updated) to include emerging techniques, add focus to tributaries, encompass new priority areas and to apply prescriptions for watershed (and thus fisheries) improvements “ridge top to ridge top.”

ISRP Comment/Question: While the model watershed program is a good one, and is doing important work that is gaining momentum in the community, a performance audit might result in some tightening of the program and its budget.

Response: The Idaho Model Watershed Project welcomes the suggestion and concept of a performance audit and recommends the weeks of August 16 to 20$^{th}$ or 23 thru 27$^{th}$, 1999.

**Project: 9401805 Continued Implementation Of Asotin Creek Watershed Projects**
Sponsor: Asotin County Conservation District

CBFWA tier: 1
ISRP review: Fund for one year; future funding contingent on comprehensive review of restoration programs within the basin, and demonstration of biological benefits.

ISRP Comment/Question: Fund for one year; future funding contingent on comprehensive review of restoration programs within the basin, and demonstration of biological benefits.

Response: All habitat projects are review by technical and citizen committees and prioritized to address limiting factors identified in the Asotin Creek Model Watershed Plan (Plan). These comprehensive reviews result in projects that meet the most appropriate actions for watershed restoration and that meet the needs of the co-managers as well as private citizens.

Because future funding is contingent on comprehensive review of restoration programs, Washington State University has been hired to monitor the chemical attributes at 10 sites along Asotin Creek and the Washington Department of Fish and Wildlife (WDFW) is monitoring biological responses to restoration projects. WDFW has collected data pre- and post- installation of in-stream and riparian habitat. Final reports from both agencies were due December 1999, but the data gathered up to this time is baseline information, due to the fact that this is the second year of contracts. WSU will be able to compare their chemical data with a pre-watershed assessment completed in 1993. Also temperature meters and sediment samplers have been deployed throughout the watershed, and U.S. Forest Service also monitors for in-stream and riparian habitat improvements.

ISRP Comment/Question: Has the project resulted in biologically measurable benefits to fish and wildlife?

Response: This is difficult since the results of the project implementation may not be apparent for several years. As an example, enhanced riparian vegetation will not reduce water temperature enough to show measurable benefits within the first years of riparian tree plantings. Utilization of WSU, WDFW, U.S. Forest Service and temperature and sediment monitors to evaluate the short and long-term effectiveness of these projects will continue.

ISRP Comment/Question: This plan to continue habitat restoration in the Asotin Creek watershed is enthusiastic but deficient in that no attempt is made to translate possible habitat improvement into gains in fish numbers.

Response: It is difficult to correlate direct gains in fish numbers to habitat improvement considering that many "out of basin" factors influence the number of spawning adults returning to Asotin Creek. The watershed technical committee has recommended that benefits from watershed restoration be evaluated primarily by measurable improvements in habitat conditions (eg. reducing stream temperatures) and secondarily by increases in fish numbers. Watershed restoration cannot be the sole effort to increase fish populations in Asotin Creek. Additionally, full evaluation of changes in smolt production and adult returns would cost nearly as much as this projects entire budget. Currently a minimum of 75% of the funding is used for on the ground fish habitat projects (ie. riparian fencing, tree plantings, alternative water developments, in-stream habitat projects, monitoring and evaluation of projects).

ISRP Comment/Question: Furthermore, the project was apparently initiated prior to completion of a watershed analysis.

Response: This is incorrect. Department of Ecology, Washington State Conservation Commission, and BPA funds were used to begin a watershed analysis and limiting factors inventory for planning purposes. The Asotin Creek Model Watershed Plan (Plan) was printed in 1995 and habitat projects started in 1996. In-stream, riparian and upland projects were not initiated until after the Plan was completed.

ISRP Comment/Question: However, it appears that the project is scheduled to continue indefinitely; it needs a definite end date, and set of reviewable objectives and a time line.

Response: Yearly funding is requested to continue implementation of Asotin Creek watershed projects. Asotin Creek was selected as a "Model" watershed by the State of Washington and BPA to demonstrate the best methods for watershed restoration and to initiate interest within the Asotin watershed as well as other watersheds. Landowner participation and interest has resulted in almost all of the identified limiting factors being addressed. This success has sparked interest in other watersheds within the county that also has endangered salmonids, resulting in increased need for future alternative funding sources. BPA requested funds during the next four years is reducing. The watershed technical and citizen committees have also recognized the need to revisit the Plan's objectives and goals and our short-term successes in achieving those objectives.

Reviewable objectives and timelines have been presented. In last year's proposal the objectives and timelines for this proposal were complemented. A definite end is hard to determine, but the need identified to review objectives and tasks after five years shows the commitment and dedication to habitat restoration.

ISRP Comment/Question: One panel member pointed out that these streams would seem to be ideal incubators of whirling disease.

Response: This is an unsubstantiated claim. The Grande Ronde is the only watershed in Washington where the parasites have been documented. This comment has no bearing on this project or drainage and is inappropriate.

ISRP Comment/Question: Some of the instream work, in particular, has the potential to do serious damage.

Response: The reviewers' intentions with this comment are uncertain. Serious damage related to property, in-stream or riparian habitat? In-stream work is based on a watershed assessment, limiting factor analysis and Rosgens Stream Classification Systems according to the Plan. A stream geomorphologist, WDFW fisheries biologists, U.S. Forest Service fisheries biologist, U.S. Fish and Wildlife and National Marine Fisheries Service consultation and other

members of the technical committee as well as citizen input is used to evaluate in-stream structure needs or placements.

In the context of this discussion, stream physics proceeds biology. Example, without floodplains in arid environments like the Blue Mountains of southeastern Washington, it becomes virtually impossible to maintain riparian vegetation. Without riparian root cohesion in streambanks, long-term woody debris recruitment, corridor shading and numerous biological features that affect stream temperature, cover and bank erosion, acceptable habitat conditions for salmonids is not attainable. Yet all these characteristics cannot exist without the physics of the floodplain and bankfull (channel shaping flow) channel.

The development of a floodplain is a function of physical valley development, bankfull dimension, hydrologic conditions, present and historic climatic patterns, stream development, gradient and so forth. These are all physical factors than need to be addressed before proceeding with long-term stream restoration plans. The basis for restoration in Asotin Creek, at numerous sites, involves the analysis of the stable reference site condition. The use of the reference site, regional bankfull curves, and historical photos are all design parameters for specific restoration sites on Asotin Creek. When these stable reference site conditions continue to maintain their dimension pattern, profile, and good salmonid habitat conditions while being subjected to numerous flood events, they are valuable resources for desired restoration conditions.

ISRP Comment/Question: The project needs to produce an evaluation, in a subsequent proposal, of sediment fate, output and stability of structures that have been affected by past project activities, and an assessment of how the fish are responding.

Response: A good M & E procedure such as the techniques described in Stream Channel Reference Sites: An Illustrated Guide to Field Technique by Harrelson, Rawlins, and Potyondy, General Technical Report RM-245, Rocky Mountain Forest and Range Experiment Station, US Forest Services will capture changes in dimension pattern and profile, while documenting erosion using pins and chains. To address sediment fate involves extensive offsite evaluations by bedload samplers and subpavement analysis. These sorts of procedures can be used but timing, budgets, and human resource availability are limiting factors in a comprehensive sediment fate analysis. The project sponsor would suggest using onsite pins, cross-section, profile, and limited bedload analysis as a reasonable alternative. Currently all available technical assistance and funding to evaluate sediment fate and stability of structures is being used. Natural Resource Conservation Service standards and specifications are followed to ensure structural stability.

When these physical factors are addressed in Asotin Creek, “the biologicallly measurable benefits to fish and wildlife” can yield improvements as riparian vegetation, woody debris, in-stream habitat and aquatic factors improve.

The “bottom’s up” planning, coupled with collaboration with agency representatives in habitat projects in this area is key to prioritized projects being completed that benefit fish and wildlife habitat. Local landowners agree with this saying, “Good Stewardship has it Rewards.” This funding proposal has helped set goals and continued funding will enable most of the objectives in the Plan. Continued efforts will be made to meet the needs of the ISRP, but local collaboration appears to be lost in this process. The project has the support of the Nez Perce Tribe, WDFW, US Forest Service, DOE, USFWS, NMFS, and most importantly private landowners. Putting cost-share dollars on the ground is a commitment of this proposal and utilizing over 75% of the funding for prioritized projects is commendable.

**Project: 9401806 Implement Tucannon River Watershed Plan To Restore Salmonid Habitat**
Sponsor: Columbia Conservation District

CBFWA tier: 1
ISRP review: Fund for one year. Subsequent funding contingent on comprehensive review of restoration programs within the basin, and demonstration of biological benefits.

ISRP Comment/Question: It is very difficult to review projects such as this on an annual basis, particularly when little or no information is given about project objectives and milestones.

Response: The Tucannon River Model Watershed Plan goal is to improve habitat conditions to support salmonid populations. Meeting this goal will impact the co-managers biological goals of improved pre-spawning and juvenile survival by providing quality habitat. Although instream bio-engineered habitat structures accelerate the natural fluvial process of a stream, time is still needed to allow pools to scour, thalweg to stabilize and gravels to sort for fish utilization.

ISRP Comment/Question: Proper oversight is not possible, nor is it likely to be, unless the project has: a) a clear end date, and b) a set of project milestones pertinent to individual years, against which progress can be measured.

Response: The Tucannon River Model Watershed Plan originally estimated implementation time at 10 years at the cost of 6 million dollars. Restoration activities were identified by river reach from the mouth to federal land administered by the U. S. Forest Service. In the *Plan* evaluation of restoration projects was set at 5-year intervals. The first restoration projects were installed in 1996; thus the first major milestone year is 2001. Project function and utilization by salmonid is currently being monitored however predicting outcome is premature, as project function within the fluvial system is maturing and stabilizing.

ISRP Comment/Question: The proposal states that in 1998 10,000 trees were planted and about 12,000 feet of riparian fence installed. This sounds impressive, but no indication is give of either: a) what the goal was for each of these measures, or b) how these numbers relate to the overall watershed restoration plan.

Response: Riparian fencing is used to allow time for plantings to take root, thereby increasing riparian function of filtration, bank stability, and potential shading and decreased water temperature as canopy cover matures. Planting trees to replace lost riparian vegetation and cover will decrease the thermal effect of the sun on bare cobbles, stabilize sediments, and provide habitat cover and complexity. Each of these activities positively impact limiting factors identified within the *Plan*.

ISRP Comments/Question: The panel was particularly concerned that despite continued monitoring, little information was present to indicate what benefit (or harm!) had resulted from past restoration activities. Some: Has the project resulted in biologically measurable benefits to fish and wildlife? Of the instream work, particular, has the potential to do serious damage.

Response: All habitat project structures are currently in place. 1996 structures were tested with extreme high water on January 1, 1997. Some maintenance and repair work was necessary; however, all structures remained in place and are currently functioning. NRCS engineers evaluate structures on a yearly basis to insure structure integrity is maintaned.

WDFW has documented spawner utilization of habitat structures at sites previously void of redds. Fish utilization of project habitat structures will be measured and documented this year.

ISRP Comments/Questions: Th project needs to produce an evaluation in any subsequent proposal, of sediment fate, output and stability of structures that have been affected by past project activities, and an assessment of how the fish are responding.

Response: Currently a new round of water quality testing is being conduced to assist in such an evaluation. WDFW will be conducting fish utilization counts as well as habitat assessments at each project sites, as well as, comparative sites within the basin. NRCS reviews and evaluated structural integrity on an annual basis.

**Project: 9401807 Continue With Implementation Of Pataha Creek Model Watershed Projects**
Sponsor: Pomeroy Conservation District

CBFWA tier: 1

ISRP review: Fund for one year. Subsequent funding contingent on comprehensive review of restoration programs within the basin, and demonstration of biological benefits.

ISRP Comment/Question: This project is very similar to Proposals 9401805 and 9401806. The geographic focus is slightly different.

Response: There definitely is similarity between this proposal and 9401805 and 9401806. The Pataha, Asotin and Tucannon were all selected as model watersheds in 1993 for the purpose of restoring and enhancing habitat for the endangered Snake River Salmon and we work very closely together in our programs. Similarities are reflected because the three watersheds share some of the same people on a technical advisory committee and have set up goals similar to one another. The Pataha Watershed's focus is directed more towards upland practices and sediment reduction while Asotin and Tucannon have incorporated more instream habitat improvement into their implementation plans.

ISRP Comment/Question: This project has been ongoing since 1996or before, and is projected to continue indefinitely. It is very difficult to review projects such as this on an annual basis, particularly when little or no information is given about project objectives and milestones.

Response: It is true that the restoration project has been going on since before 1996 and might continue for several more years. The restoration project should be viewed as a movement rather than an individual project with a definite beginning and an end date. It has been determined that the Pataha delivers sediment into the Tucannon River. It has been doing that for years and is not going to be stopped in a short period of time. A new concept of farming (no-till) has been introduced to farmers that will dramatically reduce the sediment delivery into the streams. The period of time it takes until enough farmers adopt this practice and make an impact on sediment delivery, is the time that funding should be made available. Implementation of other proven conservation practices is encouraged to the farmers and ranchers along with introducing the CREP program. New emphasis is being placed on the importance of a healthy riparian area.

ISRP Comment/Question: The information presented is insufficient to determine whether project objectives are being achieved. Furthermore, the proposal talks about such goals as tons of soil "saved". Is this really a Program goal, that is somehow related to the hydropower system? It sounds much more appropriate to NRCS programs, one would at least hope for some cost sharing.

Response: The progress of this project is measured in the amounts of soil saved (not eroded from the land). The objective is to reduce the amount of sediment delivered into the Tucannon River to a level that will not adversely affect the incubating salmonids in the river. As more no-till and other conservation practices are implemented, less soil erosion will occur and less sediment carried to the Tucannon River and all streams in the watershed and county.

Currently, acreage's of no-till seeding within the watershed is being tracked. Soil losses are documented using RUSLE (Revised Universal Soil Loss Equation). The Pomeroy Conservation District is currently working with Don McCool of WSU on determining the exact amount of soil saved by implementing no-till, annual cropping and other practices and comparing them to the amount of soil that is currently eroding from the conventionally farmed fields. In the past, figures have been used by NRCS to estimate soil loss, but McCool using Pataha Watershed data to refine the RUSLE program is doing new work. District and NRCS personnel to collaborate these RUSLE figures will do actual soil erosion measurements.

The comment about soil saved and how it is related to hydropower is not clearly understood. Any sediment or soil that is lost from production on cropland will end up in the stream. Any protection that can be afforded to the streams for fish production, will offset losses caused by the hydrosystem elsewhere in the migration path.

As far as this project being more appropriate for NRCS programs, cost sharing is not available through NRCS or the Farm Service Agency for upland conservation programs on a short-term program. Both NRCS and FSA help implement long term programs such as EQIP, CREP and CRP but are not involved with short term funding of upland sediment reduction program such as ours. The desire is to try and introduce this program to as many farmers and ranchers as possible and not lock all of them into long term contracts. The conservation district is responsible to obtain funding for cost share of these programs.

**Project: 9402600 Pacific Lamprey Research And Restoration**
Sponsor: Confederated Tribes of the Umatilla Indian Reservation

CBFWA tier: 1
ISRP review: Fund in part at reduced level (10%) to assess results and develop a long-term strategy, along the lines of objective 2 (10% of the budget). This project has been ongoing for approximately 5 years, project scientists need to show and assess the results to date and develop a long-term strategy.

ISRP Comment/Question: Fund in part at reduced level (10%) to assess results and develop a long-term strategy, along the lines of objective 2 (10% of the budget). This project has been ongoing for approximately 5 years, project scientists need to show and assess the results to date and develop a long-term strategy.

Response: Results to date include completion of an initial Columbia Basin Pacific Lamprey Status Report, completed annual project reports for 1996-1997, identification of physical indicators of stress and effective radio tag sizes for application in adult passage studies, reviving of adult counts at mainstem dams and documentation of significant night migration, analysis of current versus past mainstem adult counts, preliminary analysis demonstrates lack of adult homing affinity based on radiotagging, development of the Columbia Basin genetic database which suggests very little variation in stock structure, assessed general past and present population abundance and habitat conditions for lamprey in NE Oregon and SE Washington subbasins, gained valuable knowledge on artificial propagation techniques such as capturing, transporting, holding, disease treatment, and spawning, established and chaired a multi-entity Columbia Basin Pacific lamprey technical work group which meets annually to coordinate and update studies and needs, and utilized combined knowledge from all actions above to draft a Umatilla Basin pilot lamprey restoration plan.

The long-term project strategy is to: 1) address information gaps (past and present abundance, life histories, radio tagging methodology, passage & habitat limiting factors, migration behavior, genetic database, and artificial propagation techniques) in order to develop a sound pilot subbasin lamprey restoration plan; 2) implement, monitor and fine tune the restoration approaches and; 3) ultimately utilize demonstrated project success in pilot and other subbasins to restore natural producing populations with fisheries throughout NE Oregon and SE Washington.

ISRP Comment/Question: Although Pacific lamprey constitute an important resource that has potentially suffered the same limiting factors as Pacific salmon in the Columbia River Basin, the scientific basis for identification of limiting factors, population assessment, better management, restoration actions, and other mitigation for hydropower impacts is meager.

Response: Limiting factors were identified by literature reviews (any regional area management report or research project which discuss past and/or present habitat conditions and any documentation of decreasing lamprey populations in areas effected by habitat alterations) and interviews with current and retired regional biologists and tribal elders in seeking and confirming similar information as from literature.

Population assessments were conducted for Columbia River mainstem by utilizing the best available past fish ladder counts and improved/expanded current counts. Night counts were done at Bonneville Dam to determine the previously unassessed adult night migration. Past subbasin conditions were determined by literature review and interviews (any information was sought that included direct or incidental lamprey sampling or documentation). Current subbasin conditions were determined by literature reviews, interviews and electroshocking. Sampling revealed general presence/absence and relative abundance in NE Oregon/SE Washington project area. Project personnel have had workshops with Great Lakes sea lamprey control experts to receive guidance in larval population assessment techniques and specialized gear requirements.

Recommendations for improved lamprey management were developed by identifying past management actions (literature review and interviews) that resulted in population declines (commercial over fishing at Willamette Falls, rotenone treatments for rough fish control & lamprey migration barrier “lips” installed at mainstem dams to reduce “interference” with salmonid counts), identifying modification or elimination of actions known to negatively impact populations.

Lamprey restoration actions were developed by conducting limiting factor analysis and general population assessments to better understand population declines and causes and carrying out specific objectives (listed below) to gain knowledge on information necessary to develop and implement a pilot restoration plan. Knowledge was gained regarding past and present abundance and distribution, adult radio tagging methodology, general migration behavior, genetics database, and artificial propagation techniques. The pilot restoration plan for the Umatilla Basin includes actions such as providing more flow during critical migration periods, collecting broodstock from the neighboring John Day Basin, spawning broodstock, and outplanting offspring for natural rearing. A complete monitoring and evaluation section of the restoration plan is being drafted to delineate specific actions and methodologies for tracking reintroduced lamprey survival and ultimately the success of the subbasin restoration effort. All restoration actions and the M & E approach will be peer reviewed to ensure coordination and scientific credibility. To ensure scientific and peer credibility, this project also developed the Status Report on Columbia Basin Pacific Lamprey Projects and Needs, July 1999, provided in Volume 1 of this version of the FY2000 DAIWP. This report includes recommended critical lamprey study needs and general objectives that were identified at a multi-agency technical workgroup workshop.

This project has not been engaged in specific studies to assess hydropower impacts to lamprey. However, radiotagging methodologies were identified and are currently being employed by others (NMFS) to evaluate adult passage at mainstem dams. In conducting an analysis of lamprey abundance and distribution, this project has concluded that there has been major hydroelectric impacts to lamprey because successively fewer and fewer adults are counted in an upstream direction in the Columbia and Snake Rivers (where large numbers formerly existed – see Status Report on Columbia Basin Pacific Lamprey Projects and Needs – July 1999).

ISRP Comment/Question: They intend to integrate these data with "new knowledge" with regards to genetics, disease, pheromones, and supplementation, although the sources of these data are not obvious.

Response: This project performed a study to quantify genetic differences/similarities between selected natural Pacific lamprey populations within the Columbia River Basin, to scale the genetic variance among populations to the greater geographic distribution of the species (e.g. selected Pacific Coat drainages), and to quantify temporal variation. Samples were collected by this project in 1996 through 1998 and are being analyzed at the University of Idaho. Preliminary results using gel electrophoresis of protein allozymes suggests very little variation in stock structures (unlike salmonids).

This project has been discussing disease concerns involved in outplanting larval lamprey into the Umatilla River with USFWS and ODFW pathologists. Discussions are ongoing and all concerns will be addressed (e.g. treatments, pre-liberation sampling, etc.) prior to supplementation occurring. During initial holding of broodstock at the USGS/BRD Columbia River Research Laboratory in 1998, we have learned that adults are susceptible to furunculosis which is likely tied to water quality. We have also found through literature review that lamprey have shown to not be susceptible to bacterial kidney disease. We will be coordinating with the USFWS pathology lab at White Salmon, WA to conduct checks for parasitic, viral, and bacterial pathogens prior to release of larvea into the Umatilla River.

Pheromones emitted by larval sea lamprey in the Great Lakes are known to attract adults into streams prior to spawning. In 1998, we sent lamprey samples to the University of Minnesota to check for the presence of petromyzonol sulfate, the known migratory attractant. Pacific and brook lamprey gall bladders contained the chemical and we presume the same attraction behavior is exhibited in these species also.

To ultimately accomplish successful outplanting of larval lamprey into the Umatilla River to supplement the extremely limited level of natural production currently occurring, we are gaining experience in various artificial propagation techniques. These include adult broodstock capture, holding and transport in the field and also adult holding, spawning, and initial larvae rearing in captivity at the USGS/BRD Columbia River Research Laboratory.

ISRP Comment/Question: Of the three objectives, only the third (testing constraints regarding lamprey restoration in the Umatilla River) and fourth (current lamprey presence and distribution in the John Day, Grande Ronde, Tucannon, and Walla Walla sub-basins) offer anything new and unique.

Response: Objective 1 will result in increased attention devoted to counting of adult lamprey migration at mainstem dams. Counts were last conducted in the 1960's until recently revived, largely at the urging from this project. We will continue to work with the U.S. Army COE in support of increased counts (including night counts) and standardization of counting at each project (similar to attention given to anadromous salmonid counts). The outcome of these efforts will result in increased knowledge of the current status and distribution of the depressed Columbia Basin lamprey populations. Trend analysis can be conducted from this information as well as increases due to specific restoration efforts such as this project.

On one hand the ISRP recognizes the importance of the planning objective (Objective 2 is the only one recommended to be funded) then at the same time asks what is new and unique that it will offer. The lamprey restoration plan for the Umatilla River will be a compilation of all current knowledge into specific action with monitoring and evaluation to determine restoration success. We envision this plan as being a working document which will be strengthened and modified as new information and findings become known. Lamprey restoration has not been planned and attempted in a Columbia Basin tributary to date.

The attached Status Report on Columbia Basin Pacific Lamprey Projects and Needs (July 1999), developed with input from a multi-agency technical work group, strongly recommends demonstration that rehabilitation is feasible by conducting controlled, designed studies following pilot restoration actions in one stream. Objective 3 will initiate this action in the Umatilla River. Through monitoring and evaluation of proposed restoration actions, we will track the survival of various life history stages in captivity and in the wild. We will determine the lamprey restoration success of these initial efforts and make recommendations for fine tuning the approach taken in the pilot basin and ultimately apply it elsewhere in the Columbia River Basin.

The CTUIR is interested in better understanding current status and distribution of lamprey populations throughout its ceded lands in NE Oregon and SE Washington. This information along with findings from the Umatilla pilot restoration effort is expected to be utilized in development and later implementation of lamprey restoration efforts in these subbasins also.

ISRP Comment/Question: Although logically describing the problem, the proposal lacks convincing illustration of the problem; graphical representation of information from the 1995 status report, integrated with new data, could have provided more substance to the proposal.

Response: Severity of Pacific lamprey population declines and impacts to Native American culture are presented in proposal sections 8a and 8d. Illustrations such as figures are generally not possible in proposals due to the requested volume limitation. However, in the attached Status Report on the Columbia Basin Pacific Lamprey Projects and Needs (July 1999), a current status of populations and fisheries are presented. In summary, all the above states that lamprey populations have seriously declined and are in possible threat of extinction if the downward trends continue. Mainstem counts in the 1960's at Bonneville and The Dalles Dams (when counts were formally done) ranged from 300,000 to 350,000 and are now (with recent revived counts) abut 15,000 to 20,000 (only 5% of the population levels observed three decades ago). In the 1996 and 1997 annual project reports, with the exception of the John Day Basin, initial population assessments revealed that the once abundant populations throughout NE Oregon and SE Washington are either extirpated or nearly so. With the exception of Willamette Falls, Native Americans in the Columbia Basin no longer have opportunities to exercise treaty reserved fishing rights.

ISRP Comment/Question: Monitoring and evaluation criteria are not directly discussed.

Response: The following restoration actions and evaluation criteria are contained in the draft Umatilla Pilot Pacific Lamprey Restoration Plan (currently under peer review with completion scheduled for 1999). The collection of adult broodstock in John Day river, transport, and hold in captivity until ripe action will be measured by survival during capture and transport and survival during holding. Spawning broodstock in captivity and rearing early larvae will be evaluated by determing egg fertilization success and early survival of larvae. Transportation of early reared larvae to natural production areas in the Umatilla River Basin will be evaluated using survival of larvae during and immediately following release. Utilization of the Umatilla River to naturally rear larvae through outmigration stage will be measured by tracking larvae survival and growth using electroshocking index plots and estimating outmigration abundance by operating rotary screw trap in lower river. Finally, monitoring adult return success to the

Umatilla River will be evaluated by operating traps at Threemile Dam in the lower Umatilla river to document adult return increases and conducting spawning ground counts to track increases in natural production.

ISRP Comment/Question: Facility and personnel descriptions are inadequate to assess the capability to conduct the proposed work, especially objectives #3 and #4.

Response: The personnel and facilities, through CTUIR staffing and subcontracting, are adequately qualified to conduct the proposed work. A subcontract to CRITFC will be used to coordinate with U.S. Army COE for improved adult counting at dams and analyze data. A subcontract to the University of Idaho for lab work. A subcontract to CRITFC for analysis and conduct protein electrophoresis and analyze results for development of genetic database. A subcontract USGS/ BRD Columbia River Research Laboratory to investigate artificial propagation techniques (holding, spawning, early rearing, etc.). and finally, CTUIR staff (2 biologists, 1.5 technicians, and temporary summer technicians) to Develop, implement, and evaluate pilot restoration project in the Umatilla Basin

**Project: 9403300 The Fish Passage Center (Fpc)**
Sponsor: Pacific States Marine Fisheries Commission

CBFWA tier: 1
ISRP review: Fund for one year. Subsequent funding contingent on programmatic review. The entire set of smolt monitoring projects needs to receive a programmatic review with one of the goals to create a central data repository that includes historical and raw data. They also need to develop a justifiable program-wide design. The various regional data sets should be consolidated with a specific protocol for quality control and data collection. Whether this consolidation is done through selecting an existing project to cover this, or creating a new site is a policy question. Various analysis efforts should be funded separately from the data collection entity.

ISRP Comment/Question: Like the other data management proposals (Streamnet, Fish Passage Center, PTAGIS and DART), this proposal fails to explain the need for the separate centers; the distinct function each serves; the nature of coordination between them; safeguards against redundancy; safeguards against inconsistent representations of the same nominal information; and the ability to serve the actual information needs of clients who have to access data from more than one data center to get an answer to their question. The entire set of database efforts should be coordinated by one entity. Data access should be possible from a single portal. A reorganization of "data centers" might benefit by separating the three functions that now appear to be mixed together at some of the data centers, and by attempting to centralize the coordination of each function, namely (1) data archiving and access, (2) data collection design, and (3) data analysis.

Response: Most of the ISRP comments regarding databases had little specific application to the Fish Passage Center (FPC). The majority of the comments made by the ISRP have been addressed at length and resolved through regional effort, discussion and finally, resolution. Specifically the question of separating databases from analysis has been addressed in intense efforts by regional parties, the result and resolution has been the present construction of the FPC and the Fish Passage Data System (FPDS). The FPDS maintained and used at FPC contains high quality real time fish passage management data published on the World Wide Web and available to all parties.

The Fish Passage Advisory Committee, composed of the salmon managers of the basin’s fisheries agencies and tribes, holds a weekly conference call and a monthly meeting during the fish migration season. Management demand for data can be assessed at these weekly meetings. If management demand for data changes during fish migration season, it can be assessed at these weekly meetings, and data published or collected by the FPDS can be changed as rapidly as possible to meet management demand. The demand for data collected and published by the FPDS is therefore frequently assessed by the salmon managers of the fisheries agencies and tribes in the basin. Data needs that are critical to actual management questions are identified and met, as quickly as possible, in this existing forum.

ISRP Comment/Question: Activities are clearly described but the proposal does not address quality control issues nor provide a strategy for assessment of information needs.

Response: Smolt monitoring data collected and published by the FPDS is subjected to a statistical quality control methodology designed by statistician Tom Berggren of the FPC. The Quality Assurance/Quality Control Protocol for smolt monitoring project data collected and published by the FPDS is described here.

The QA/QC protocol for the Smolt Monitoring Project (SMP) data requires that a portion of the daily data batches submitted to the FPC SMP database be cross-checked with the daily data sheets at the remote SMP sites. There are a total of four traps that operate 5 days per week over a 12-week period for the SMP (3/8-5/29 for the traps on the Salmon and Snake rivers and 3/15-6/5 for the traps on the Imnaha and Grande Ronde rivers). There are seven dams at which monitoring occurs for the SMP. This monitoring occurs 7 days per week over periods varying from 21 weeks (Rock Island Dam) to 30 weeks (Lower Granite, Little Goose, Lower Monumental, John Day, and Bonneville dams) to 36 weeks (McNary Dam). The goal of the QA/QC protocol is to crosscheck enough data batches to assure that the potential discrepancy rate across the total data batches for a given site is acceptably low.

The QA/AC protocol will be to crosscheck two daily data batches out of every week at each of the monitoring sites. The Fish Passage Center (FPC) will randomly pick the two batches to be examined each week. FPC personnel are responsible for conducting the crosscheck and reporting back to the respective remote SMP site on the results. The crosscheck of a daily data batch will consist of verifying the data entries in the database with the data on the site's data sheets for that batch. The data entries are found in several tables of the data base, including the (1) catch summary table which includes the sample-related parameters and flow/spill entries, (2) the catch detail table which includes the fish counts per species, descaling numbers, mortalities, and sample rates, (3) the incidental catch detail which includes the number of fish from the incidental list, the (4) the mark detail table which includes counts of fish with elastomer tags, photonic tags, spaghetti tags, and freeze brands, and (5) the transportation detail table which includes the number of fish transported and bypassed at the collector dams.

If no discrepancies are reported on the two batches examined for a given site, then the QA/QC procedure for that site is finished for that week, and the process will begin again the following week. Under the condition that no discrepant data batches are found in the data batches examined over the full season, we will be 95% confident that the discrepancy rate across all batches for the season will not exceed approximately 5% for the monitoring at the dams and 10% for the monitoring at the traps (higher at the traps only because of fewer batches for the season). This estimation utilizes methods given in the Sampling Techniques book by Cochran (1977) on pages 55-60. If for each site we let **N**= total number of batches, **X**= number of batches with discrepancies, **n**= number of batches checked, and **x**= number of checked batches with discrepancies, then we may use the hypergeometric distribution to determine the probability of finding **x** discrepant batches in the **n** batches examined when **X** discrepant batches actually exist in the total **N** batches. The number **X** that satisfies the probability statement Pr(**x**=0|**X,N,n**)=0.05 is the upper 95% confidence limit for the number of discrepant batches in the total **N** batches when no discrepant batches (**x**=0) are found in the **n** sampled batches. In this case, there is a high probability that the seasonal discrepancy rate is less than **X**/**N**.

If a discrepant batch is found at a site during a given week, then the FPC will randomly pick two additional batches from that week to be cross-checked by FPC personnel. If neither of these new batches show discrepancies between the entries in the SMP database and the values on the site's data sheets, then the QA/QC procedure is finished for that week. But if additional discrepancies exist, then there will be continued selection of batches and cross-checks made until the site is back in compliance with what it shows in the SMP data base and what it shows on the site data sheets. It is unlikely that such an extended level of cross-checking would be necessary at a given site past the first week of the season.

The specific methodology of the QA/QC protocol used by FPC for smolt monitoring data acquisition and publication raises questions about the applicability of this protocol to PITAGIS or StreamNet.

The FPDS is the only data system in the basin that has been audited by independent accountants. The firm of Symonds, Evans, and Larson, P.C., Certified Public Accountants, performed the audit in late 1997. An example of the methodology used and the findings stated in the audit follows.

"On a judgmental basis, we selected 15 transactions during the year ended December 31, 1996 and 10 transactions during the seven month period ended July 31, 1997 to verify that errors in data that were detected by FPC were

appropriately corrected." In their final submitted report, the auditors stated: "For the judgmentally selected transactions… we verified that all such errors in data that were detected by FPC were appropriately corrected."

In addition to the SMP QA/QC protocol used by the FPDS, and the independent audit of the SMP FPDS data quality, a year to date summary of all daily data submitted to the FPDS from each remote SMP site is returned in spreadsheet form to each originating site weekly during fish passage season, for the purpose of data validation and quality control. Remote SMP sites use these spreadsheets to make sure that all data submitted by them to the FPDS matches that which the FPDS publishes.

The region, in addressing the issue of regional databases, recognized that the highest data accuracy is accomplished when data is maintained close to its origin and by those who are responsible for it's acquisition and use. No data is scientifically useful unless all the qualifications, annotations, and limitations of that data are published along with the data itself. All of the raw and historical data on fish passage and management is maintained at FPC and is available to all entities. The FPC is responsible for the actual acquisition of the data, the design of the data acquisition methodology, and uses the data in analyses. The consolidation of these three data functions in one entity make the FPC the most knowledgeable about the data it collects, publishes, and uses. This is of benefit to the region and all users.

The present state of technology and the advent of the World Wide Web as a cost effective means to publish and distribute data worldwide raises questions about the need for central data repositories. Since the data is more accurate, more useable and better understood near its origin and where the staff clearly understands it, the use of hyperlinks on the World Wide Web enables individual databases to remain near its origin and at the same time be available through a single portal or portals on the web. This type of data collecting and publishing framework results in higher quality data for users, and at lower cost. The hyperlinks that presently exist between the FPC, Streamnet, and PITAGIS enable each one of these web sites to be a single portal through which the other data is available. The issue of duplication between StreamNet, FPC and PITAGIS has been addressed in the past. Each of these projects serve a different purpose, data nor effort are duplicated yet the information contained in each database is easily available through hyperlinks. The present system of hyperlinks is designed to avoid duplication, assure data accuracy by keeping databases near their origins, and to assure worldwide availability.

The FPDS Smolt Monitoring Project data collection and publishing system is designed for constant change in order to meet changing management needs during fish migration season. Inherently, large central data repositories are very difficult and expensive to change and modify. Each potential modification to the repository must be analyzed to determine its impact across a wide range of applications before any modification is actually done. As the size of the central repository grows, this task becomes increasingly complex, time consuming, and expensive. Small databases or "data marts" designed to meet specific needs and solve specific problems are much simpler and more cost effective to change and modify. Consequently, a single portal or data warehouse that is made up of linked smaller "data marts" or databases is more cost effective to maintain than a large central data repository which involves a large complex global data structure or model. Additionally, a data warehouse made up of smaller individual data marts can also respond to changing management needs much faster than a large central data repository. The present system of hyperlinks between the web sites of PITAGIS, Streamnet, and FPC has been developed and modified to meet regional needs in an efficient cost-effective manner.

Reference:

Cochran, William G., 1977. Sampling Techniques (third edition). John Wiley & Sons, New York. 428 pp.

**Project: 9403400 Assessing Summer And Fall Chinook Restoration In The Snake River Basin**
Sponsor: Nez Perce Tribal Fisheries/Watershed Program

CBFWA tier: 1
ISRP review: Fund for one (more) year. Subsequent funding contingent on development of a more convincing proposal containing a better rationale of the need for the work, and a comprehensive summary and interpretation of the significance of past results.

ISRP Comment/Question: The stated goal of project is to “collect life history and survival info on wild Snake River fall chinook, and evaluate supplementation strategies” however it is difficult for reviewers to determine the (original and current) motivation of the work as the proposal consists mostly of a description of ongoing work.

Response: The original motivation for this study centers around the need to help rebuild the Snake River fall chinook salmon stock in all mainstem habitats that are currently available above Lower Granite Dam. Besides the Snake River, the remaining habitat for fall chinook salmon includes the Clearwater and major tributaries, and lower reaches of the Salmon, Grande Ronde, and Imnaha rivers. To date, the lower mainstem Clearwater River and the Snake River have been surveyed for spawning habitat quality and availability for fall chinook salmon. In the Mainstem Clearwater River Study (Arnsberg et al. 1992), spawning habitat was more than adequate to facilitate fall chinook rebuilding and recommendations to supplement Lyons Ferry Hatchery fall chinook (Snake River stock) immediately to help recover the stock was suggested. There was also a need to collect life history and survival information on wild fall chinook in the lower Clearwater River. There was no information on natural spawning success and when and at what size fall chinook emigrated. Knowing fall chinook sizes and time of emigration was especially urgent because of potential impacts to rearing fall chinook in the lower Clearwater from the unnatural and formidable volumes (20-25 times the natural hydrograph) of Dworshak Reservoir water released in an effort to cool the Snake River and to meet NMFS's Biological Opinion flow targets at Lower Granite Dam. Currently, it is found that wild fall chinook do not start actively emigrating out of the Clearwater until about mid-July and that large volumes of cold water during that time may affect their growth and smoltification during their first year of life. For example in 1994, Dworshak releases occurred the first two weeks in July at 25,000 cfs (about 25 times normal flows) at 7.4 degree water. Clearwater River temperatures decreased over 10 degrees C within 24 hours. During 1994, PIT tag detections of wild fall chinook was < 0.3% for subyearlings and about 6% for yearlings. Wild fall chinook sizes in the Clearwater River are currently being used in FPAC and TMT forums as consideration of impacts to Clearwater River fall chinook growth and emigration timing and for making Dworshak release recommendations that balances cooling needs in the Snake River. Survival for fall chinook through the lower eight reservoirs and dams was another unknown for wild fall chinook and more than likely where the highest mortality occurs, however, this needs to be documented before recovery efforts through supplementation can be fully assessed. Supplementation cannot be fully assessed as a successful tool for recovery of any anadromous species with the current high mortality that has been documented through the hydro-system. Mortality of fall chinook through the system may be especially high because of the later summer and fall seaward migration when unfavorable conditions persist and most fish are trucked below Bonneville Dam. The USFWS is addressing fall chinook survival in the Snake River and the project sponsor is looking at survival of wild fall chinook from the lower Clearwater and Grande Ronde Rivers, where most of the spawning occurs besides the mainstem Snake. Also using Lyons Ferry Hatchery fall chinook as surrogates for wild fish in survival studies since wild fish are in very low numbers. Also monitoring adult fall chinook returns through spawning surveys and is collecting spawned-out carcasses to document the hatchery fish contributions and the degree of supplementation success.

ISRP Comment/Question: The summary of past accomplishments does not indicate progress toward goals of the FWP but rather lists details such “water temperature data were collected …”., Statements like “Quarterly progress reports have been submitted to BPA since the project’s inception” aren't helpful to reviewers in this regard Good reasons to continue funding this project are not given in the proposal.

Response: The FWP's goal (of doubling salmon and steelhead runs without loss of biological diversity) will not likely be accomplished with the current status-quo hydro-system operations. This was the major conclusion at the 1997 Lower Snake River Compensation Plan Status Review Symposium. Supplementation efforts of the Snake River fall chinook since 1996 has be documented (through differential elastomer marks) to have more than doubled the adult escapement over Lower Granite Dam in 1998 from previous years' escapement numbers. This study is research and monitoring and evaluation oriented and provides information to salmon managers on the most favorable flows for wild fall chinook survival given the current constraints of the hydro-system, and is providing time-of-release and size-at-release information to enhance emigration survival of supplemented fall chinook.

Good reasons for continuing this project are clearly outlined in Section 8 of the Project Proposal and are: 1) to monitor and evaluate current and future management of the hydro-system and document impacts to the ESA listed fall chinook salmon above Lower Granite Dam through wild and hatchery emigration timing and survival studies (in Section 8a and 8b); 2) genetic monitoring of the Snake River fall chinook stock is and will be important to document allele frequency changes in the wild stock, to what degree supplementation and non-Snake River origin fish,

"strays," are contributing to the fall chinook population, and how to manage mating protocols so that the wild stock is not genetically "swamped" by an imbalance of hatchery fish (in Section 8a and 8b); and 3) this project is evaluating the success of recent Snake River fall chinook supplementation efforts above Lower Granite Dam through redd surveys and in collecting spawned-out carcasses to document the contributions of hatchery fish to increase natural production without comprising productivity of the naturally producing stock (in Section 8a).

ISRP Comment/Question: The proposal does make an effort to list hypotheses for each objective, but it is not clear how they would be evaluated. The ISRP was unable to determine what would be done with the proposed year (2000) funding, , and how it relates to previous (and future) plans.

Response: It is stated very clearly how objectives and hypothesis will be evaluated in the Project Proposal in Section 8f under Methods. For example, Holb on page 16 states: "No difference in emigration survival and travel times occurs between Lyons Ferry Hatchery sub-yearling fall chinook and wild fall chinook regardless of size and time of release." This will be evaluated by Methods section on page 18 second paragraph which states, "the Survival Under Proportional Hazards (SURPH) model will be used to estimate juvenile emigration survival to the mainstem dams. ANOVA will be used to measure statistical survival differences between hatchery and wild fall chinook releases." This paragraph also gives current results and states, "Results so far have indicated that the larger fish released earlier in the year survive better at least to the downstream dams that smaller fish released later in the summer."

ISRP Comment/Question: This project may be a candidate for cost sharing, now that NPT has won a settlement from Avista for fishery damage from the Washington Water Power dam. In that context reviewers wonder what is the justification for 100% support from FWP?

Response: ISRP comments on how to spend Tribal settlement awards are not appropriate under their review of the scientific validity of projects. The fact that the Washington Water Power (Avista) Dam has been removed, mitigation of fall chinook fishery losses should be associated with where the majority of the mortality currently occurs i.e. through the lower mainstem Snake and Columbia River reservoirs and dams which are operated by BPA. Once this high mortality factor is removed, through dam breaching or other means, and anadromous fish stocks recover, a continued heavy reliance on project funding to evaluate recovery efforts should be made through the FWP.

**Project: 9404700 Lake Pend Oreille Fishery Recovery Project**
Sponsor: Idaho Department of Fish and Game

CBFWA tier: 1
ISRP review: Fund. Recommend for funding for a longer duration. The project should be funded to cover at least one and preferably two kokanee generations. OK for multi-year review cycle; review in FY2002 for analysis of results. (Priority for Lake Pend Oreille fishery.)

ISRP Comment/Question: The proposal is thorough and scientifically sound, except for the point brought up by last year's reviewers that a longer time frame is needed.

Response: Project sponsors have asked the Council to request that the U.S. Army Corps of Engineers keep the lake level higher for one additional year of testing. After this, it is anticipated that the lake will drop to its low pool elevation during winter for a couple of years. The project's results will be reviewed. Managers will then decide whether or not the project was a success, whether to implement project findings, or whether to recommend future studies on the lake.

**Project: 9404900 Improve The Kootenai River Ecosystem**
Sponsor: Kootenai Tribe of Idaho

CBFWA tier: 1

ISRP review: Fund in part for one year; do not fund objective 4, evaluation of artificial fertilization. Subsequent funding must be contingent on: demonstration of integration in the umbrella, clear and compelling scientific justification of their work, and completion of a comprehensive scientific review, via a visiting committee.

ISRP Comment/Question: This project comes across, as it did last year, as unfocused and unclear in direction. Several different directions are being taken simultaneously and over time (e.g., sturgeon in the mainstem, tributary surveys, fertilization effects, and the completed studies of macroinvertebrates in the mainstem)…. Some mutual definition of hypotheses seems to be in order. This project would benefit from a broader peer review that includes other projects in the basin…

Response: For several years, managers and researchers have met in part to shape the direction of studies needed to improve the Kootenai River ecosystem. Committees have been formed, and most recently, funding has secured the development of an Adaptive Environmental Assessment (AEA) model to help prioritize limiting environmental factors and appropriate management strategies. As intended by ISRP reviewers, the project managers strongly suggest that this AEA process be carefully and completely summarized to date for the Kootenai ecosystem, and continued necessary interagency coordination occur to systematically prioritize and test potential limiting factors, following the well-tested AEA decision matrix protocols. This is already underway, and an outside objective review panel could help facilitate or more importantly expedite the process. The project managers are recommending review and implementation of "most likely to succeed" management options. The AEA process is all about defining, prioritizing, and testing a range of potentially appropriate management alternatives. In fact, this suggested approach is the preferred solution to many of the ISRP's major concerns regarding this proposal.

ISRP Comment/Question: The planned fertilization study appears inadequately planned and too simplistic and short term (and probably should be dropped).

Response: This, as one example of many complex issues addressed by this proposal, requires the input of a wide range of scientifically qualified specialists and generalists. The model approach to Kootenay Lake fertilization may provide an example of how to organize and prioritize activities of this project. Again, functional resurrection of the AEA group will be used to address this and other issues. The project managers plan to delete this particular objective until the AEA group has had further discussion of all the management options for the Kootenai River.

ISRP Comment/Question: The proposed work will characterize the survival rates of white sturgeon eggs and larvae in capsules protected from predation and silt. This is a worthy objective; however, will silt be less of a problem downstream as much of it has settled behind Libby Dam? Has Libby Dam reduced the capacity of the stream to move bedload?

Response: Silt may in fact be less in the post-impoundment system in terms of overall load; however, the river now lacks the energy to remove fines from the channeled and diked river. The river has been completely isolated from its natural, functional floodplain (a possible physical and ecological feature which may have define the natural Kootenai River ecosystem). These changes may have altered the location and severity of depositional areas, in which virtually all white sturgeon spawning has been documented during the past 10 years.

ISRP Comment/Question: Will survival rates of larval sturgeon be compromised for the lack of food in capsules?

Response: Beyond a certain larval size, the experimental design (apparatus) could bias results by prohibiting access to food items; however, the intent of this study is very specific, rendering this concern moot. The purpose of these experiments is to determine whether fertilized Kootenai River white sturgeon eggs will hatch in the Kootenai River in the absence of 1) background levels of siltation in the river; and 2) absence of predation. Furthermore, researchers in British Columbia have successfully deployed this apparatus to investigate hatching success in mountain whitefish and rainbow trout (Larry Hildebrand, RL&L Environmental Service Ltd., Castlegar, BC, personal communication 1997). Researchers there have also collected wild fertilized white sturgeon eggs, transferred them into these exact exclosures, and documented successful hatching.

ISRP Comment/Question: To what will these rates be compared? Are there estimates of hatching and survival rates from the Kootenai?

Response: The only other empirical rates currently available for such comparisons (using Kootenai River white sturgeon eggs) come from the Kootenai Hatchery. They suggest high variability in a controlled environment. Variability could be caused by individual gamete quality, the degree of spawner relatedness, or by inconsistent hatchery practices. Experiments could be set up to successfully partition the potential effects of these putative early life mortality factors for white sturgeon.

ISRP Comment/Question: If these are difficult to gather, how valuable will the data set concerning encapsulated eggs and larvae be?

Response: Fertilized Kootenai River white sturgeon eggs are readily available from the adjacent Kootenai Hatchery, taken fresh from wild broodstock. Results of these experiments can be very helpful: Currently debate exists concerning the effects of water quality, siltation, predation, and gamete viability on success of Kootenai River white sturgeon progeny, both wild and hatchery. Empirical data from controlled lab and field experiments are desperately needed to either validate or invalidate speculations about these potential mortality factors.

ISRP Comment/Question: Much is made of the simulation model for the Kootenai. Has it been validated? Will a Bayesian approach to model refinement be anticipated (aka, adaptive management?).

Response: It has not been validated and should be comprehensively tested, given a systematic, adaptive evaluation. (See also comments in Response 1. above)

ISRP Comment/Question: Proposal 8806500, for example, reports that sand does not appear to be inhibiting spawning grounds of sturgeons, and silt may not be a problem either.

Response: This type of unsubstantiated speculation is exactly why the exclosure experiments for white sturgeon egg incubation are needed in the river. This is a very peculiar statement, because personnel from 8806500 were reportedly routinely unable to dislodge artificial spawning substrate mats under full power of large inboard jet boats when these mats were submerged in the egg depositional areas for more than several days, due to siltation or sedimentation (Vaughn Paragamian, Idaho Department of Fish and Game 1996). Please also refer to response to ISRP comments from Project 20009 – Evaluate sediment transport in spawning habitat, Kootenai River, Idaho.

**Project: 9500100 Kalispel Tribe Resident Fish**
Sponsor: Kalispel Tribe of Indians

CBFWA tier: 1
ISRP review: Fund in part. Fund objectives related to habitat restoration and monitoring of naturally producing bass. Do not fund bass supplementation objectives (40%), considering the general abandonment of this as ineffective in most parts of the country and the potential effectiveness of creating over-winter habitat for natural production.

ISRP Comment/Question: Fund in part. Fund objectives related to habitat restoration and monitoring of naturally producing bass. Do not fund bass supplementation objectives (40%), considering the general abandonment of this as ineffective in most parts of the country and the potential effectiveness of creating over-winter habitat for natural production.

Response: The ISRP found the Kalispel Resident Fish Project was “a well prepared and thorough proposal” and “this project proposal is above average.” In addition, the ISRP goes on to say “the proposal is technically sound” and “is one of the few with clearly stated and measurable objectives.” However, the ISRP had a philosophical problem about enhancing and supplementing largemouth bass populations. The ISRP states, “It does not appear that bass spawning habitat is limited…. .” Many of the factors currently limiting natural population recruitment of the largemouth bass population are uncontrollable. The most obvious factor is the fluctuating water levels that occur in Box Canyon Reservoir during their spawning season. Negative fluctuations can result in nest abandonment and/or nest dewatering. In northern Idaho lakes, it was reported that prolonged periods of declining water levels greater than 3cm a day, or 38cm over a 13 day period increased the probability of nest abandonment by the guarding male (Bennett and Bowles 1985). When the guarding male abandons the nest, the embryos left in the nest are susceptible

to predation by other fish species. Conversely, positive fluctuations in lake level can cause a change in osmotic pressure that can crush the eggs.

The ISRP recommends not to "fund bass supplementation considering the general abandonment of this as ineffective in most parts of the country." While there are some bass supplementation programs that have not met their goals and are considered ineffective, there are some bass supplementation programs that have been proven successful.

In Chatfield Reservoir, Colorado, largemouth bass were hatchery reared to one year of age using intensive and extensive culture from 1978 to 1981. Subsequent samples of age 2 bass in the reservoir composed 12%, 59%, and 59% of the population, during sample years 1980, 1981, and 1982 respectively (Kreiger and Puttman 1986). Increases in the age two class fish were directly attributed to hatchery supplementation.

In Oklahoma, stocked bass constituted 76% and 72% of the 1980 year class through the first two growing seasons in Liberty and Wiley Post lakes respectively (Boxrucker 1986). Supplemental stocking of largemouth bass fingerlings in Lake Lawtonka in southwestern Oklahoma appeared to increase the number of fish reaching the quality length of 300 mm (Boxrucker 1984). Fieldhouse (1971) reported that stocked largemouth bass averaging 190 mm in length constituted 18% of that year class, four years after stocking.

ISRP Comment/Question: There is a good pre-and post-enhancement monitoring plan. The objectives, methods, and facilities narratives were good.

Response: The Kalispel Tribe will continue to monitor and evaluate to determine the effectiveness of the bass supplementation program.

References:

Bennett, D.H. and E.C. Bowles. 1985. Recruitment and survival of young-of-the-year largemouth bass Micropterus salmoides in the Coeur d'Alene Lake system, ID. Completion Report, Proposal Number II, Washington Water Power Company, Spokane.

Boxrucker, J.C. 1984. Evaluation of supplemental stocking as a black bass management procedure in large impoundments. Oklahoma Department of Wildlife conservation, Federal Aid in Fish Restoration, F-39-R, Job 4, Final Report, Oklahoma City.

Boxrucker, J.C. 1986. Evaluation of supplemental stocking of largemouth bass as a management tool in small impoundments. North American Journal of Fisheries Management 6:391-396.

Fieldhouse, R.D. 1971. Results of stocking largemouth bass in Nassau Lake. New York Fish and Game Journal 18:68-69.

Kreiger, D.A. and S. Puttman. 1986. Evaluation of supplemental stocking of yearling largemouth bass in Chatfield Reservoir, Colorado. Colorado Division of Wildlife, Fort Collins, Colorado.

**Project: 9500600 Shoshone-Bannock/Shoshone Paiute Joint Culture Facility**
Sponsor: Shoshone-Bannock Tribes

CBFWA tier: 1
ISRP review: Fund in part. The ISRP recommends funding for Objectives 1-4 only. These first four objectives are slated for completion in June of 2001. These objectives provide valuable survey work on native fishes and the habitats that support them. These objectives could be folded into 9200100, which contains related habitat restoration efforts; the name of project 9200100 also better describes this work. Objectives (5 – 8) should not be funded without a more scientifically sound approach to establishing the need for and feasibility of a hatchery component. The ISRP does not support the hatchery development and fish-stocking portions of the proposal. If a hatchery is supported at all, it should focus on the possibility of using Yellowstone cutthroat or other native species. Nevertheless, the hatchery effort is premature.

ISRP Comment: Objectives (5 – 8) should not be funded without a more scientifically sound approach to establishing the need for and feasibility of a hatchery component.

Response: The need for the construction of a hatchery for propagation of native fishes has been established numerous times since its inclusion in the Columbia River Basin Fish and Wildlife Program (1995). A feasibility study (1992), master plan (1996), independent scientific review (1998), and review by the NWPPC (1998) have all been completed prior to submission of this proposal. Furthermore, objectives (1-4) will quantify and further elucidate the known need for production and re-introduction of native Yellowstone cutthroat trout into historical habitats. Yellowstone cutthroat trout have been petitioned for listing under the ESA, and occupy less than 10% of their historic habitat. In addition, Yellowstone cutthroat trout occupy less than 5% of historic habitat on the Fort Hall Reservation. There is clearly a need for re-introduction of hatchery reared native fish.

ISRP Comment: The ISRP does not support the hatchery development and fish-stocking portions of the proposal. If a hatchery is supported at all, it should focus on the possibility of using Yellowstone cutthroat or other native species.

Response: The project's focus is propagation of Yellowstone cutthroat trout and redband trout; both are native species. The following is taken directly from the short description section of the project proposal form; "Planning, development, and operation of a hatchery facility to provide native trout for re-introduction of stocks affected by hybridization, habitat loss, and exploitation on the Duck Valley and Fort Hall Reservations."

ISRP Comment: A hatchery may not be needed at all, and may not be effective, given that habitat rehabilitation is likely to allow cutthroat trout to increase in abundance and that there are significant risks to cutthroat of rainbow introduction and collection from and stocking into small populations of fish.

Response: This comment might have merit if there were adequate pure populations of Yellowstone cutthroat trout available for colonization. In addition, hybrids and rainbow trout will concomitantly increase in abundance and hybridize with any pure cutthroat benefiting from habitat rehabilitation.

ISRP Comment: Reviewers doubt, for instance, that the authors can demonstrate that the put-and-take fisheries will relieve pressure on native populations and that the stocked fish can be kept from escaping.

Response: The doubt that the reviewers express is an artifact of not being a fisheries manager on the Fort Hall Indian Reservation. The Fort Hall Reservation is relatively small in size, but has many Tribal Members harvesting limited fisheries resources. Tribal Members frequently request stocking of fish on reservation waters and would most certainly use any and all put-and-take fisheries on the reservation. The project sponsors are certain that put-and-take fisheries would take pressure off native stocks and clearly stated in the proposal that monitoring would be developed to quantify these effects. The proposal also stated that stocked fish would be limited to enclosed bodies of water. Moreover, enclosed bodies of water would be utilized that are not subject to flooding.

ISRP Comment: Additionally, any "domestic" hatchery strain of Yellowstone cutthroat trout used for the purpose of reestablishing wild populations should be associated with a rigorous genetic monitoring and maintenance program. A less expensive alternative would be to obtain gametes from genetically-pure wild native populations that are found in watersheds with characteristics similar to those of the habitat that will be the focus of reintroduction efforts.

Response: The proposal stated that genetic health/genetic purity of hatchery raised Yellowstone cutthroat will be monitored on an annual basis. In addition, the proposal stated that 20-30% new [wild] gametes (milt) would be introduced into the hatchery yearly. Collection of gametes from pure populations of cutthroat found in relatively close proximity to re-introduction sites might be difficult. Objectives 1-4 of the project include genetic analysis of Yellowstone cutthroat trout purity on the Fort Hall Reservation. If necessary, Yellowstone cutthroat trout gametes may be collected from other areas with biotic and abiotic characteristics similar to areas slated for re-introduction.

**Project: 9501100 Chief Joseph Kokanee Enhancement Project**
Sponsor: Colville Confederated Tribes

CBFWA tier: 1
ISRP review: Do not fund. Proposal is technically inadequate. However, the topic is important question for the region; BPA should develop an RFP.

ISRP Comment/Question: This project has two major elements, stock assessment and assessment of entrainment through Grand Coulee Dam. In many respects, this project is the keystone for justifying the extensive artificial production of fish for stocking in Lake Roosevelt.

Response: The Lake Roosevelt fishery provides a significant impact to the regional economy. Furthermore, the Lake Roosevelt fishery is important to area residents for sport fishing and to tribal members for subsistence fishing. The determination of entrainment and identification of the hydropower operation (power peaking, flood control or firm power commitments) responsible for the entrainment is the key to Lake Roosevelt fisheries management decisions. High entrainment rates have implications for hatcheries and stocking programs, as well as to fishery management issues important to tribes and the public.

ISRP Comment/Question: The proposal is not well prepared, does not express its objectives well, and cannot be recommended for funding. Many typos in the proposal suggest hasty and sloppy work, which may be indicative of the approach to the project.

Response: Admittedly, the proposal could have been prepared with greater attention to grammar and punctuation. The ISRP reviewed a proposal and not the actual project. To insinuate that the project is poorly managed without first-hand knowledge seems to be inappropriate.

ISRP Comment/Question: CBFWA notes that the project is not cost effective, and that it has already fulfilled its objectives.

Response: Hydroacoustic monitoring of entrainment has always been associated with high costs. The Confederated Tribes of the Colville Reservation reviewed all bids and selected the lowest bid to perform the investigative work. Hydroacoustic monitoring during 1996, 1997, and 1998 identified the third powerhouse as the predominate entrainment location; however, reservoir operations precipitating the entrainment are not fully understood. In an attempt to become more cost effective, discussions were held with the hydroacoustic contractor. The decision was made to continue data collection at all three powerhouses, but to only analyze data from the third powerhouse. Substantial budget modifications (reduction of analysis) were completed during the CBFWA review process that resulted in considerable savings of $236,073, making the project much more cost effective.

Goals and objectives for this project have been partially met. Continued work is needed to allow the completion of the project goals and objectives. Specifically, additional biological data collection is warranted regarding natural production, kokanee spawner escapement, egg-to-fry survival, genetic evaluation, and specifics of dam entrainment over a wide range of reservoir elevations, conditions, and water cycles.

ISRP Comment/Question: Only administrative accomplishments are presented, and the narrative states that no biological opinions have been reached.

Response: The tribe accepts this criticism, acknowledging that additional pertinent biological information should have been presented in the proposal and is included here as additional information.
The spawner escapement objective for this phase of the project has only been partially met. At this time, we have a limited database (1995-1998) for making biological decisions. Natural production kokanee spawning escapement returns to all tributary streams are greatly reduced from past historical levels. The reasons for this phenomenon are not fully understood. Adult kokanee escapement to the San Poil River in 1995, was estimated to be between 70-100 adults. In 1996, spawner escapement into the San Poil River dropped to 8, and to 0 in 1997. A small increase was observed in the San Poil during 1998 when 35-70 adults were estimated to have returned. Similar declines were documented in other monitored streams. Spawner escapement to the Nespelem River in 1995, 1996, 1997 and 1998 were 17, 3, 6 and 16 fish respectfully. In 1997 adult kokanee escapement into Barnaby Creek amounted to two

hatchery origin males. In the fall of 1998 an estimated 600-1000 kokanee returned. The return was made up almost exclusively of hatchery origin males. Adult kokanee returns to Big Sheep Creek were estimated by EWU and WDFW personnel during the mid 1980's at 1500-2000 adults. Fall 1995 returns were 5 adults, 0 in 1996 and 1997. Three adult kokanee returned in 1998. Additional monitoring is necessary to determine if viable populations of natural production kokanee exist in the lake prior to developing any management actions pertaining to these stocks.

The genetic analysis objective is ongoing. Genetics analysis was conducted using the standard starch-gel electrophoretic process. The analysis has been contracted to the University of Montana and is supervised by Dr. Robb Leary. Preliminary analysis indicates a high probability that the San Poil River/Nespelem River kokanee are nearly identical and possibly unique. The San Poil/Nespelem River kokanee stock has been genetically compared to the Lake Whatcom, WA kokanee stock. Preliminary analysis indicates that the fish from the San Poil/Nespelem are similar but different than the Lake Whatcom stock utilized by regional hatcheries. The Lake Whatcom stock is currently outplanted by BPA funded hatcheries as resident fish stocks as partial mitigation for anadromous fish losses. Genetic information and creel data analysis suggests the existence of a sizable "natural production" kokanee fishery that is not of Lake Whatcom origin. The origin of these fish is unknown. It is suspected that the wild origin kokanee recruitment into Lake Roosevelt may be fallout from the upper Columbia River. Upper Columbia kokanee stocks, especially those from the Kootenai River/Lake system are under genetic investigation at this time. At this time, we have not been able to obtain a complete set of samples from British Columbia (B.C.) waters. The receipt of additional samples from B.C. is expected following the fall 1998 spawning run. Additional genetics research is warranted before any management options for hatchery and natural production populations can be discussed or implemented.

The egg to fry survival objective to this phase has not been fully met for several reasons, but the primary reason is due to the low number of returning adults and the numerous flood events during critical periods of egg development.

The dam entrainment objectives for this phase of the project have only been partially met. The establishment of entrainment rates through Grand Coulee dam over a wide range of reservoir elevations, conditions, and water cycles is necessary before a full understanding of entrainment can be made. Since 1996, numbers of fish entrained through Grand Coulee dam have been high. The entrainment total for 1996 was calculated at 816,472 during a nine-month period of 1996. 1997 entrainment through the dam was lower at 391,933 fish. Preliminary analysis from 1998 suggests that entrainment rates are similar to 1997. Data analysis results from 1996 and 1997, combined with partial analysis of 1998, indicates that the third powerhouse is responsible for the majority of the entrainment. The high fish entrainment established during 1996 might have been a function of the high water year combined with drum gate spill. In 1996, drum gate spill occurred for the first time in twenty years. 1997 entrainment numbers equaled 391,933 fish, much lower than in 1996. The lower 1997 entrainment figure of 391,933 may be due in part to the reduced annual water budget. Both drum gate and draft tube spill occurred during 1997. Monitoring of entrainment through draft tube spill is not mechanically possible, however entrainment via draft tube spill may be substantial since the water is spilled from deep in the forebay. Additionally, during 1997, some hydroacoustic transducers at high entrainment sites were down due to malfunction and/or scheduled maintenance outages.

Entrainment rates are also reflective of the annual drawdown cycle and its timing. Recent data analysis indicates a correlation between lake forebay elevations and entrainment timing as applied to day versus night periods. Concurrently, with the hydroacoustic study a weekly gill net survey has been conducted in an effort to determine species composition of the entrained fish. Current data analysis indicates that species composition is similar from year to year. In 1996, a total of 106 fish were caught in a nine-month period. Kokanee comprised 22% of the catch. In 1997, kokanee totaled 26% of the catch. In 1998, 329 fish of various species were caught, with kokanee making up 39 % of the catch. Rainbow trout made up 11%, 14%, and 48% of the catch in 1996, 1997, and 1998 respectfully. Smallmouth bass made up 32 percent of the catch in 1996 and 29 percent in 1997.

ISRP Comment/Question: There are techniques available for reducing entrainment of kokanee in the discharges of large storage dams (e.g., strobe lights demonstrated in Lake Pend Oreille and at Dworshak).

Response: Strobe light arrays have demonstrated limited success in the Northwest. They are ineffective under high turbidity conditions. While a single array was used at Dworshak, the third powerhouse at Grand Coulee Dam would require a more substantial number and investment. Until strobe light systems are proven, it seems foolish to invest large sums of money in a strobe light system at Grand Coulee Dam.

The comparison of the entrainment potential of Dworshak dam and Lake Pend Orielle to Grand Coulee dam as large storage facilities is unrealistic. The storage capacity of Grand Coulee dam is 9,562,000-acre feet. The storage capacity of Dworshak Dam on the Snake river is 3,468,000-acre feet. Albeni Falls Dam, which creates Lake Pend Orielle, has a capacity of 1,153,000-acre feet. The combined capacities of both facilities mentioned as large storage facilities is 4,621,000-acre feet, which is less than half that of Grand Coulee Dam. Additionally, selected period discharge volume at Albeni Falls Dam approximates 52 kcfs, during the same period at Dworshak Dam the discharge is 1.5 kcfs. On the other hand, Grand Coulee Dam discharges range from 170-180 kcfs. Comparisons of Dworshak and Albeni Falls dams to Grand Coulee Dam are unrealistic from both a storage capacity and a discharge volume standpoint.

**Project: 9501300 Nez Perce Tribe Resident Fish Substitution Program**
Sponsor: Nez Perce Tribe

CBFWA tier: 1
ISRP review: Do not fund. The proposal is technically inadequate and scientifically weak

ISRP Comment/Question: This proposal is in need of clearly defined objectives and substantial editorial revision to avoid (or to succinctly define) such references as “a multi-species ecosystem approach,” “water quality and habitat problems” and “environmental conditions that limit fishery success.”

Response: The objectives and associated tasks as stated in the proposal (section e) and below clearly reflect the intent of the Council’s program and the quantified objectives of regional managers to develop, maintain, and manage resident trout ponds within the Nez Perce Reservation to provide 4,000 to 4,750 kg of resident fish annually for harvest (CBFWA 1997).

Objective 1: Develop new resident fisheries within the Nez Perce Reservation to provide 4750 kg of resident fish annually for harvest to mitigate in part for loss of anadromous fishing opportunities. Tasks include identifying and assessing new sites, assessing environmental impacts, and developing new ponds.

Objective 2: Maintain new and existing resident fisheries within the Nez Perce
Reservation to provide 4750 kg resident fish annually to mitigate in part for loss of anadromous fishing opportunities. Tasks include identifying need for and implementing structural, and water quality improvements, which act to maintain structural integrity and assure habitat quality and quantity.

Objective 3: Manage new and existing resident fisheries within the Nez Perce Reservation to provide 4750 kg resident fish annually to mitigate in part for loss of anadromous fishing opportunities. Tasks include developing fish management plans specific to individual pond sites; implementing fish management plans; stocking fish; monitoring fish growth, condition, and population structure; evaluating and monitoring harvest and stocking efficiency.

ISRP Comment/Question: A serious concern among reviewers was a statement indicating that a “multi-species ecosystem approach” involving trout, bass, and sturgeon is to be used. What species of trout, bass, or sturgeon are considered? The approach on its face seems infeasible because trout and bass are not compatible. This leads to a lack of confidence in the proposal and concern that the work is not based on sound science principles.

Response: A multi-species ecosystem approach refers to the development and management of new and existing ponds as ecosystems (i.e., by maintaining the equilibrium between predators and prey, and maximizing biotic interactions to increase harvest quantity and quality). The choice of appropriate species and/or combination of predator and prey species (either warm-water or cold-water species) is based on the environmental conditions/seasonal limitations (habitat, water temperatures and oxygen levels, etc.) within the individual pond. Using this approach, the project sponsor hopes to optimize the species assemblage in each pond to reduce the need and costs associated with the continual stocking of “catchables.”

It was proposed “to monitor and evaluate the effects of prey introductions on the growth and potential harvest of target species (i.e., trout, bass, sturgeon).” This statement did not intend that a multi-species approach is only to

include these specific species and/or combinations of these species. Environmental conditions and seasonal limitations (water temperatures, dissolved oxygen levels, habitat, etc.) in each individual pond and at proposed pond sites will determine the appropriate cold and/or warm-water species assemblages. For example at Talmaks Reservoir and at the proposed Deer Creek site water quality and habitat (i.e., temperatures and dissolved oxygen conditions) are suitable for maintaining a year-round cold water trout fishery. Thus, management plans at Talmaks and Deer Creek target trout as the harvestable species, and dace as the primary prey species at Talmaks. Dace were present in Talmaks before the pond was drained for restoration and it is felt that re-establishing the population will provide a prey base for the trout and reduce the need to stock "catchables." Additional investigations at the proposed Deer Creek site are needed before an appropriate prey species and/or possible additional species are considered. Environmental conditions at Mud Springs and a number of other proposed sites can limit trout survival. High temperatures, low oxygen levels, elevated nutrient levels, and associated algal blooms during the summer and oxygen depletions during the winter have limited the success of establishing a trout fishery some years; however, these ponds could successfully sustain a warm water fishery, and by stocking a limited number of catchable trout to be fish out before temperatures and oxygen levels become lethal, can offer spring and/or fall trout fishing opportunities. Thus, combinations of species, even cold and warm water species at appropriate times of the year, can be used to maximize resident fishing opportunities. Within this management context, smallmouth bass and trout are compatible.

In 1999 this project proposed to 1) identify limiting environmental factors at the existing ponds being managed under this project; 2) identify target harvest species and a forage fish suitable for individual ponds; and 3) develop management plans (including stocking strategies and schedules) for existing and proposed sites in order to maximize biotic interactions between predators and prey species. Management plans will be presented for sponsor review and will met NEPA requirements and BPA's Master Plan guidelines for the stocking of new species.

ISRP Comment/Question: Are tribal members capturing a significant number of the fish stocked and/or is all the harvest designated for tribal members? If not, are there fees, creel limits, etc. for non-tribal members? How is harvest monitored? What strains of fish are used in the pond?

Response: Stocking history and harvest at Talmaks and Mud Springs is reported annually to BPA in the form of Annual Reports. Harvest is monitored using creel surveys conducted throughout the primary fishing season, May through October. (Methods and references for creel survey are present in the methods section of the proposal.) Catch rates of over 10 fish per hour have been observed. Rainbow trout (Arlee and Shasta strains) produced at Dworshak National Hatchery have primarily been stocked at Talmaks and Mud Springs. Currently, criteria for the development of new pond sites and stocking new species include the development of an environmental assessment or impact statement following NEPA guidelines and sites where stocked fish have the potential to impact anadromous or native resident populations are not considered. However, if a native broodstock were available and suited for the conditions, tribal fishers would prefer it.

Currently, only two fisheries, Mud Springs and Talmaks, are being maintained and managed. Both ponds are located at historic Nez Perce Tribal camps used for ceremonial retreats and not open to non-tribal members. Non-tribal use and collection of fees at proposed pond sites have not been fully explored. A number of factors including whether the pond is developed on tribal lands and /or if addition funds will be needed to maintain and police the area if open to the public will need to be considered.

ISRP Comment/Question: Are five full-time people truly required for the project? If so, experiments with species combinations and densities should be possible.

Response: Project personnel are currently involved in maintaining and managing the existing sites and in the investigation and assessment of proposed sites. In the year 2000, testing and evaluating predator/prey interactions within the existing ponds is proposed. A number of experimental manipulations are being considered that will allow improvements in harvest through specific species combinations and densities.

ISRP Comment/Question: The proposal states that "both the Deer Creek and Cold Springs sites were considered suitable," but neglects to say in what respects and for what? Material in the proposal is needlessly repetitive; for example much of the project history is repeated in the methods section.

Response: The methods section of the proposal outlines the criteria that is used to determine preliminary site suitability (i.e., analysis of water quality and quantity, terrain, geology, potential timber losses, potential reservoir depth/size, biological losses and impacts, site access, land ownership, watershed conditions and uses). Deer Creek investigations began in 1997 and preliminary data is present in the 1997 Annual Report. Additional information was collected in 1998 to develop a site feasibility report for the development of the reservoir and compile environmental information needed to complete NEPA documentation. This information was not available when the proposal for FY2000 funding was developed. This information is available in the 1998 Annual Report and in a 1999 evaluation report of the Structures for Deer Creek Dam completed by the US Army Corps of Engineers.

**Project: 9501500 Lake Billy Shaw Operations and Maintenance and Evaluation (O&M, M&E)**
Sponsor: Shoshone-Paiute Tribes of the Duck Valley Indian Reservation

CBFWA tier: 1
ISRP review: Do not fund. The proposal is not technically sound and does not offer a sound scientific basis for (or even a clear description of) the work to be done.

ISRP Comment/Question: This proposal lacks explicit support for almost all of the evaluation categories.

Response: The problem the ISRP seemed to have with this project was an appearance of a lack of any Monitoring and Evaluation program in place for this new reservoir. There is, however, a detailed O&M and M&E plan in place and submitted to Bonneville Power. The plan has been in effect and the monitoring was begun upon completion of the dam. The majority of the work that is to be done is biological sampling and monitoring. As well as monitoring of the piezometers to ensure proper filling and locate any problems in the construction of the dam should they arise.

ISRP Comment/Question: The project objectives are unclear and do not match the description in the project abstract.

Response: Objectives are to 1) protect and establish shoreline habitat (plant trees, erect exclosure fence), 2) disseminate information, 3) work and educate youth of the Owyhee schools in the biological science field, and 4) follow the O&M, M&E Plan. These objectives are included in the abstract; however, they may not be as clearly stated as they are in the proposal itself.

ISRP Comment/Question: No information is provided on what percent of the total work has been done and what is left to do, e.g., fencing, tree planting, etc.

Response: In this project it was very difficult to give an estimate of work completed in 1999. The construction itself was completed in November of 1998 and to guess as to the amount of work that would be completed in 1999 would have been unjustified. Roadwork was completed in 1999, but to what extent was unknown. The location of where culverts would need to be placed could not be determined until after the Spring runoff. The amount of available water and rate of fill was not known. Without knowing all this information, it was difficult to determine when work in 1999 would be able to begin and how long the season would available to complete work. All tasks have been approved by BPA and BPA staff has been to the site for inspections and to insure adherence to the statement of work.

ISRP Comment/Question: The proposal is for work in an apparently open system, but potential impacts of the work are not addressed or even stated.

Response: The Lake Billy Shaw reservoir is in a closed system. There are fish screens at the inlet canal that fills the lake. There is approximately seven miles of desert between the spillway and the Owyhee River. There is no way that any fish could survive to enter the river. Also, this project has completed the three-step process as required by current policy with peer reviews. This closed system has no potential impacts to the basin. Please refer to the Biological Assessment and associated FONSI, completed by Bonneville Power Administration in March 1997 (DOE/EA-1167).

ISRP Comment/Question: Stocking probably should be limited salmonids that are native to the Owyhee River; if not, the Principal Investigators need to clearly and carefully justify their selection of non-native stock.

Response: Since the onset of this project, this has been and remains the Tribes' wish.

ISRP Comment/Question: The proposed project is not consistent with the other projects proposed in the subbasin.

Response: The desire is that this project will become a self-sustaining fishery. It is the Tribes' plan to have this project become a *model* for redband trout production/preservation. The only projects in this subbasin are projects proposed by the Shoshone-Paiute Tribes. These projects were coordinated under the *umbrella concept* as directed by CBFWA.

**Project: 9501600 Genetic Inventory Of Westslope Cuttthroat Trout In The N F Clearwater Basin**
Sponsor: Nez Perce Tribe

CBFWA tier: 1
ISRP review: Do not fund. This study duplicates work that has already been published (reference) and has no scientific justification.

ISRP Comment/Question: This is an ongoing project for which reviewers find little justification.

Response: The proposal cites two mitigation planning documents for Dworshak Reservoir that support the project (Bennett 1997; Fickeisen and Geist 1993). Both documents identify the need for an evaluation of the genetic impacts of rainbow trout stocking in Dworshak Reservoir and the NF Clearwater basin tributaries. Furthermore, the project resulted from recommendations of a previous project titled "Dworshak Dam Impact Assessment and Fishery Investigation and Trout, Bass and Forage Species" (Maiolie et al. 1993). The proposal also gives substantial programmatic justification for the project such as assessing the impacts of mitigation on native fish, supporting and rebuilding native species in native habitats, preservation of natural genetic diversity within native populations, and evaluating the detrimental effects of artificial propagation on the long-term sustainability of native populations (NPPC FWP 1994).

ISRP Comment/Question: The proposal indicates that evidence of introgression of introduced rainbows into native populations has been found, but this result was a virtual certainty given the presence of both species in the basin.

Response: Although some introgression has been documented, the objective is a comprehensive inventory of the genetic status of native westslope cutthroat trout in the basin. The scientific literature supports that introgression often is a result of stocking hatchery rainbow trout in native cutthroat trout habitat. This literature is cited within the proposal, and was used as justification of the project prior to funding.

ISRP Comment/Question: There is little reason to continue this line of inquiry; if managers do not want introgression to occur, they should halt the stocking programs immediately and hope that the cutthroat trout can re-establish themselves.

Response: This is a policy issue that will be addressed when the inventory is completed and analyzed. Whatever management action or non-action is implemented, monitoring and evaluation will be required to assess the effectiveness of the decision. Simply hoping for the best with no follow-up to determine resource response would not be responsible fisheries management.

ISRP Comment/Question: The project has had adequate investment of time and money to address the stated objectives, i.e. to document the extent of introgression. The morphometric analysis is not useful and is expensive.

Response: The methodology of the project has been approved by BPA. The project tasks of collecting population density data and morphometric characteristics are included in the statement of work (1996, 1997, 1998, 1999). The morphometric characteristic analysis is not expensive, but is time consuming for project personnel to collect and analyze. The data are useful for future monitoring of trout in the Reservoir and the basin, identified as measure no. 10.3C.7 in the NPPC FWP. The data analysis will determine whether there are morphometric characteristics that are useful in determining the genetic status (field identification) of cutthroat, rainbow, and hybrid trout. These data are

of interest in that they may reduce the amount of expensive genetic analyses required to assess and monitor populations in the future.

ISRP Comment/Question: The CBFWA technical evaluation also notes that adequate data is in hand to establish that a problem exists, and that a management action should result. CBFWA comments that this proposal has outlived its usefulness as a research activity and that continued work will be of questionable value to fish.

Response: Although data has been collected to establish a problem in a general sense, the extent of the problem cannot be fully assessed until a thorough survey is completed. This survey will include approximately 70 sites within the NF Clearwater basin. The NF Clearwater basin is very large (2,440 sq km), and includes hundreds of tributary streams. Access to streams in the basin is often difficult, requiring travel on foot, horseback, or ATVs. The area includes high elevation sites that are snow-free approximately 8 weeks per year. The current proposal for FY2000 will close the inventory phase of the project. These data are as useful to management and mitigation of fisheries in the basin today, as they were when the project was initiated in 1995. The funds from FY2000 will be used to comprehensively analyze the data, write a final report, and make recommendations to the NPPC. In addition, the project has been designed to be publishable in a peer-reviewed journal. Project managers plan to submit two manuscripts as part of the final product. Publishable studies have been encouraged by BPA, and will contribute to public education and information transfer encouraged by BPA.

**Project: 9502500 Flathead River Instream Flow Project (Mfwp Umbrella Subproposal)**
Sponsor: Montana Department of Fish, Wildlife and Parks

CBFWA tier: 1
ISRP review: Fund (High priority). The contracting process with BPA should be accelerated.

ISRP Comment/Question: Fund (high priority). The contracting process with BPA should be accelerated.

Response: Nearly all ISRP comments were favorable. This project has been approved for the first two of the three-year term, but the work began in 1999. This proposal corresponds with the third year of the project.

ISRP Comment/Question: This project may well be an important component of a comprehensive mitigation and restoration effort for native fisheries within the Flathead basin. However, as indicated in review of other projects within the same umbrella, a comprehensive review of all component projects is urgently needed, the results of which should be used to develop a longer term (3-5 year) plan for the basin.

Response: We agree and welcome the ISRP's visit and detailed review.

ISRP Comment/Question: Thermal and biological sampling has been ongoing since 1987. Should it be time to wrap this up?

Response: Perhaps this was a typing error or a misunderstanding. Biological sampling related to this project in the Flathead River began in 1996, although there have been earlier BPA-funded projects, mainly related to kokanee (now nearly absent from the system) and the effects of Hungry Horse Dam operation on kokanee spawning success. Since 1996, this project has focused on the seasonal presence of fish in the river and predator/prey interactions with non-native lake trout. Lake trout began to concentrate in the river in 1989 and little documentation of their effects on native species occurred until Montana began the ongoing river project. Although radio telemetry observations, food habits analyses, and thermal monitoring completed thus far will be used in the IFIM-based river model, research on the seasonal use of macro and microhabitats only began in 1999 (Project #9502550). These two subprojects of the Hungry Horse umbrella work together to provide the physical, thermal, and biological layers of the proposed IFIM river model, which will be used with the existing reservoir model (HRMOD to create the IRCs for Hungry Horse Dam. The thermal sampling is a very small aspect of the program, requiring only monthly downloading of thermal data from several continually recording thermographs. Thermal monitoring has continued because longitudinal thermal data from before, during and after the installation of the selective withdrawal device on Hungry Horse Dam in 1995 is being used. The existing thermal model in HRMOD does not have sufficient longitudinal resolution for use in the planned dynamic river model. This proposal does not perform biological or thermal sampling, but rather

focuses on the physical dynamics of the river during varying river discharges. The contractor selected by BPA to perform this work, Bill Miller of Miller Ecological and Associates, met with the project sponsors in May 1999 and will begin fieldwork in August.

**Project: 9502800 Restore Moses Lake Recreational Fishery**
Sponsor: Washington Department of Fish and Wildlife

CBFWA tier: 1
ISRP review: Delay funding until they propose testable hypotheses developed from the existing data. There has been inadequate synthesis of existing data. Identify some specific problems, then re-submit the proposal.

ISRP Comment/Question: Delay funding until they propose testable hypotheses developed from existing data. There has been inadequate synthesis of existing data. Identify some specific problems, then re-submit the proposal.

Response: The intended start date for implementation of the Moses Lake Fishery Restoration Project was to be fall of 1998. However, due to circumstances within WDFW, the project has not fully started. The project was initiated with the purchase of required equipment and preparation for implementation. Staff required to implement the project will be hired and prepared for implementation by September of 1999. Full time biologists are expected to start the FY 1999 contract in September of 1999, beginning with implementation of Phase 1 as detailed in the FY 2000 proposal. All of the Objectives and Tasks listed for Phase 1 are projected to be completed by the end of the first contract year. The projected start date for Phase 2 is September of 2000. It is expected that phases 2 and 3 will be completed in the years to follow on the timeline proposed in the FY 2000 proposal.

ISRP Comment/Question: Accomplishments to date include compilation of a reference library on Moses Lake fishery, collection of water quality and habitat data, and formulation of study plan.

Response: The above accomplishments are referred to in Phase 1 of the proposal. Phase 1 of the proposal has not been completed because activity on the project will not start until September of 1999. It is expected that Phase 1 of the project will be completed at the end of the first contract year.

ISRP Comment/Question: The current proposal is for Phase 2, which involves further data collection and development of specific introduction proposals. The sampling procedures should have been described in greater detail.

Response: Sampling procedures will be described in greater detail following the completion of Phase 1 of the project. It is expected that Phase 2 will be started in the fall of 2000.

ISRP Comment/Question: However, additional data collection may not be warranted or of high priority at this time because there has been a lot of data collected on Moses Lake. How much more information do we need about black crappie and smallmouth bass?

Response: It is the opinion of WDFW that more information is needed to determine the specific causes for the decline of the recreational fishery in Moses Lake. Data to determine interactions, recruitment and other limiting factors needs to be collected in order to fully understand the reasons for the decline of the fishery. Synthesis of existing data will lead the project to determine the extent of additional information collection, or if more data collection is warranted. A tremendous amount of information has been accumulated on the management of crappie and smallmouth bass across their range of occupation. However, the information sought in this project, in regards to warmwater species, is an attempt to recover a single body of water assimilating known information and developing a study design to detect limiting factors for production of a sustainable sport fishery in Moses Lake.

ISRP Comment/Question: The proposers should look at the data they have and describe the testable hypotheses, although it is not apparent how such a small group of people would be able to analyze all the data.

Response: The intent of the project is to synthesize all existing data in Phase 1. Following the completion of the objectives and tasks in Phase 1, testable hypotheses will be created. Analysis of the amount of information already

existing is a daunting task, but not impossible. The number of staff asked for in the proposal is sufficient to accomplish the objectives for the project. In addition, other WDFW salaried employees will assist in some limited capacity to aid in implementation of the project. WDFW felt this was a fiscally prudent number of employees to fund for this project.

ISRP Comment/Question: Generally the project is not designed to meet regional goals in terms of native fishes. Continued reliance on warm water fishes for recreational fishing opportunities may confound public expectations regarding restoration of anadromous fishes to fishable population levels.

Response: The restoration of native anadromous and resident fishes is not the sole purpose of the NWPPC program. The NWPPC has made the decision that the substitution of resident fish to mitigate for the loss of native fishes is of nearly equal importance as the recovery of native fishes.

Substitution of non-native resident fish is an accepted form of mitigation under NWPPC's Columbia River Basin Fish and Wildlife Program. Section 10.1 A states, "Substitution is appropriate for lost salmon and steelhead in areas that previously had anadromous fish, but where anadromous fish access is now permanently blocked by hydropower development and where in-kind mitigation cannot occur. . . Substitution should occur in the vicinity of the salmon and steelhead losses being addressed, but substitution and mitigation measures may occur off site. Flexibility in approach is needed to develop a program that compliments the activities of the fish and wildlife agencies and tribes and that is based on the best available scientific knowledge."

Moses Lake is connected to the Grand Coulee Project through the Banks Lake System and is a lake in the Crab Creek chain, a tributary to the Columbia River. Therefore, substitution for this site is consistent with NWPPC objectives. Regional goals have been established according to NWPPC priorities (Section 10.1 B) for Columbia River Basin resident fish. Section 10.1 B states that the council supports ". . .populations that support important fisheries. This priority applies to introduced and native species including trout, sturgeon, kokanee, burbot, bass, perch and others."

The habitat available in Moses Lake is not conducive to native fish recovery. The project seeks to create a recreational fishery to mitigate for the losses of native fish within the Columbia Basin through resident fish substitution. The recovery of the Moses lake fishery beyond native species, whether resident or anadromous, serves to lessen the fishing pressure on native fishes. Regional goals for recovery consider the impact of fishery harvest and are directed at preservation and conservation of native fishes. Limiting present fishing pressure and the ensuing impact to native fishes will allow for recovery of native fishes, not inhibit recovery, for the future.

ISRP Comment/Question: No cost share is provided in this project. Why isn't WDFW funding part or all of this?

Response: WDFW has already funded some portions of this project, including creel surveys and baseline biological data collection. Considerable expense to WDFW was incurred in the collection of this information. Several salaried employees and countless volunteers were involved in the collection of this data.

The estimated cost for the collection of this information is $79,500: equipment costs of $9,500 (electrofishing boat use and maintenance, nets, and assorted required field equipment), and salaries and benefits of approximately $70,000 (Biologist 3 @ 6 months, 2 technicians @ 12 months, and benefits). This cost is a protracted cost spread over a period from 1991 to 1998.

ISRP Comment/Question: Are there chances for dispersal of introduced fishes?

Response: At the turn of the century all warm water fish were widely distributed throughout the Columbia Basin by the U.S. Fisheries Commission. As a result, viable populations of most warm water fish species existed throughout the Columbia Basin. The species to be recovered in the project currently exist in healthy populations throughout the Columbia Basin. Moses Lake is a relatively isolated body of water in central Washington. Outlets for dispersal to areas containing solely native species do not exist. The chance for dispersal of introduced fishes is limited. Dispersal of the introduced fish would not be into areas that do not already contain the species present in Moses Lake. The amount of fish that could potentially disperse to outside waters would not have any expected impact on currently existing fish populations whether native or non-native.

ISRP Comment/Question: The proposal does not adequately address the ISRP's FY 99 comments, Appendix A page 65

Response: Corrections in response to the ISRP's FY 1999 comments are contained within the FY 2000 proposal. New responses to FY 1999 comments will be addressed further within this document.

ISRP Comment/Question: The proposal is for a highly managed non-native harvest fishery and the choice of fish stocks is not biologically justified.

Response: Very little is known about the historical species assemblage of Moses Lake. It is suspected that the majority of the fish in the native population were cottids, cyprinids, and catostomids, and not likely native salmonids. While it is attractive to have a native fishery, these species provide very little interest to recreational anglers. Salmonids were not collected in the system until the release of "Montana black spot cutthroat" in Crab Creek in the late 19$^{th}$ century by the U.S. Fisheries Commission. The species targeted for recovery are capable of thriving in the habitat available in Moses Lake. The populations that are to be recovered have existed in the lake for decades and have contributed to a highly desirable recreational fishery. It is the intent of WDFW to create a recreational fishery that will reduce the amount of angling pressure on native salmonids within the Columbia Basin.

ISRP Comment/Question: The proposal does not adequately ensure that the proposers have sufficient understanding of the reasons for fisheries decline in Moses Lake to restore the fishery.

Response: The intent of the project is to compile all of the current information to form hypotheses to best test the suspected reasons for the fishery decline. The objectives in the proposal outline the analysis of existing information, study design and hypotheses testing to determine the limiting factors for production of a sustainable harvest fishery in Moses Lake.

ISRP Comment/Question: The experimental design is not clearly presented or justified, and the proposal does not adequately describe the methods to be used for some very complicated actions.

Response: The study design was adjusted for the FY 2000 proposal to include a more rigorous development of study design and hypotheses. Comments from ISRP FY 2000 included that the proposal was "clearly presented, but lacked testable hypotheses." Following implementation of Phase 1, testable hypotheses will be formulated.

ISRP Comment/Question: Additionally, the effects of angling are not well described

Response: Harvest has been a constant in the Moses Lake system. The proposal intends to investigate whether modification of angling will lead to greater protection of desired species and assist in recovery of the Moses Lake recreational fishery. One of the intentions of the study is to look at the level of angling that will allow for a consistent and highly productive recreational fishery.

**Project: 9505700 Southern Idaho Wildlife Mitigation**
Sponsor: Idaho Department of Fish and Game AND Shoshone-Bannock Tribes

CBFWA tier: 1
ISRP review: Fund for 1 year. Subsequent funding contingent on submission of a proposal that includes detailed monitoring plans and evidence of outcomes assessment and achievement.

ISRP Comment/Question: Fund for 1 year. Subsequent funding contingent on submission of a proposal that includes detailed monitoring plans and evidence of outcomes assessment and achievement.

Response: The M&E program for this project is in its infancy and the sponsors intend to expand and refine this component. Properties that were incorporated into previously existing wildlife management areas benefited from ongoing monitoring activities at these facilities. The project sponsor currently monitors populations and productivity of mule deer, elk, Canada goose, mallard, sage grouse, sharp-tailed grouse, breeding and wintering bald eagles and

neo-tropical migrants on these wildlife management areas. The intent is to expand the scope of monitoring to include all target species. The Wildlife Caucus is developing a coordinated M&E program with standardized M&E protocols that will be used throughout the region (See Current Status of Monitoring and Evaluation in the Wildlife Program – Report to the ISRP, July 1999, CBFWA Wildlife Caucus).

In addition, none of these properties have been in the program more than two years. The time necessary for responses to management to be measurable varies from a few years in some habitat types such as wetlands, to decades in others such as shrub-steppe. Project sponsors have already observed that passive restoration (livestock removal) in scrub-shrub and forested wetland habitat types have resulted in shrubs and trees returning to the sites once the livestock were removed. HEP-based vegetation monitoring is being used to measure baseline conditions and response to management. However, these properties have not been held long enough to measure change in most areas. It is too soon to begin the next round of monitoring; the plan is to do so at five-year intervals. HEP techniques will be supplemented by using line transects, permanent plots, and permanent photo points to measure vegetation change.

ISRP Comment/Question: The proposed land purchase is well justified and should benefit a variety of fish and wildlife. However the management plan and the monitoring and evaluation component are not well developed. A clear management plan needs to be developed.

Response: Site-specific management plans are developed for each project within a year after purchase and submitted to the Wildlife Caucus for approval. Eight (six at the time the proposal was submitted) properties have been purchased or eased since this project began. Four of the properties were adjacent to or within areas managed primarily for wildlife and were incorporated into previously existing, ongoing management programs. Plans have been prepared for each individual project but were not included in the project proposal because of space constraints. A 2,500 acre property purchased since the proposal was submitted is adjacent to/near two small properties purchased earlier. A management plan for these three properties is being written now and will be completed by September 1999. Two easements were purchased to preclude residential development and will continue to be managed by the owners as farmland under existing Natural Resources Conservation Service (NRCS) approved management plans. One wildlife habitat enhancement project plan has been prepared and was approved by the Wildlife Caucus in June 1998.

As previously mentioned the M&E program for this project is in its infancy. The intent is to expand the scope of M&E to include all target species. None of these properties have been in the program more than two years. HEP-based vegetation monitoring is being used to measure baseline conditions and response to management; however, these properties have not been held long enough to measure change in most areas. It is too soon to begin the next round of monitoring but the plan is to do so at five-year intervals. HEP techniques will be supplemented by using line transects, permanent plots, and permanent photo points to measure vegetation change.

ISRP Comment/Question: Enhancement and other management activities are the long-term costs of the project. They are substantial, and they should be clearly justified as needed and should not inhibit development of a self-sustaining system.

Response: Enhancement activities are a relatively minor part of this program and there is currently only one enhancement project ongoing. A former livestock feedlot on a state owned wildlife management area is being restored to native sagebrush-steppe vegetation to provide habitat for target species. This restoration project will provide clear benefits to wildlife by replacing bare dirt, weeds, and manure with native vegetation. The project sponsors expect this project to be self-sustaining when completed but several more years of active management will be necessary before native plants are established and noxious weeds are controlled.

O&M are a significant and essential part of this project. Much of the O&M work concerns noxious weed control or the building and maintaining of fences to control trespass livestock grazing. Without continuing work in these areas the wildlife habitat value of the properties would undoubtedly decline and progress toward full mitigation for wildlife losses would cease. In addition, all landowners and managers are required by state law to control noxious weeds.

ISRP Comment/Question: Such techniques as large-scale spraying and removal of Russian olives require explanation.

Response: The USFWS Russian olive removal proposal at Minidoka NWR was deferred until a later date after Wildlife Caucus members expressed concerns about costs, long-term benefits, and in lieu funding.

ISRP Comment/Question: Reasons for continuing enhancement should be given. Are these directly beneficial to wildlife?

Response: Enhancement activities are a relatively minor part of this program and there is currently only one enhancement project ongoing. A former livestock feedlot on a state owned wildlife management area is being restored to native sagebrush-steppe vegetation to provide habitat for target species. This restoration project will provide clear benefits to wildlife by replacing bare dirt, weeds and manure with native vegetation. This restoration project is expected to be self-sustaining when completed but we expect several more years of active management will be necessary before native plants are established and noxious weeds are controlled.

ISRP Comment/Question: Objective 4 of this proposal refers to monitoring in perpetuity to "maximize benefit to wildlife." But "maximum benefit" is not defined, nor are measurements for monitoring and evaluating it specified.

Response: The term "maximize benefit to wildlife" is not defined. The project sponsor agrees to discontinue its use. The M&E component will be expanded and refined as the Wildlife Caucus develops a coordinated and standardized M&E protocol.

ISRP Comment/Question: It is also not clear why 11 more years are needed to achieve the remaining 25% HUs.

Response: The proposers somewhat arbitrarily divided the total remaining southern Idaho hydropower HU debt and assigned 75% to acquisition and 25% to enhancements. The final ratio is unknown. Since completion of the first acquisition in 1997, 15,000 HUs have been provided toward a total construction and inundation debt of 54,000 HUs, or about 28% toward the total for all southern Idaho hydropower facilities. The estimate of 11 years to mitigate those losses is just that – an estimate.

The time needed to achieve full mitigation is dependent on funding and the timing of funding. It will be difficult to implement mitigation under the current single-year funding process and could take 11 years or many more. Multiple-year finding would provide the flexibility to take advantage of opportunities to acquire real estate that are currently being lost because of single-year funding.

**Project: 9506001 Protect & Enhance Wildlife Habitats In The Squaw Creek Watershed.**
Sponsor: Confederated Tribes of the Umatilla Indian Reservation

CBFWA tier: 1
ISRP review: Fund for one year. Subsequent funding contingent on a better description of monitoring and restoration methods and the criteria used for evaluation.

ISRP Comment/Question: In the case of wildlife habitat enhancement projects, it would be helpful to know how the particular project fits into a "big picture". What is the overall plan, and what portion of the plan is to be accomplished by this project?

Response: The comment appears to be related to the CTUIR's Wildlife Mitigation Program (the "overall plan"), and how the Squaw Creek Project fits into that program. This response addresses the ISRP comment by: 1) Summarizing BPA/CTUIR wildlife mitigation needs, goals, and objectives, 2) the executive summary of the CTUIR Wildlife Mitigation Plan (October, 1997), which outlines CTUIR mitigation goals and objectives and provides criteria for project selection, and 3) reiterating the estimated number of habitat units the project is expected to provide in meeting CTUIR Wildlife Mitigation goals and objectives (in other words, what portion of the overall plan is accomplished by the Squaw Creek project).

1) The identification of BPA and CTUIR Mitigation needs was based on loss assessments for the John Day and McNary Projects, the CTUIR/BPA Memorandum of Agreement, and the CTUIR Wildlife Mitigation Plan. The CTUIR goals and objectives for mitigation were developed and discussed in detail in the CTUIR Wildlife Mitigation Plan.

Defining mitigation needs began when an analysis of wildlife habitat losses was conducted by federal, state, and tribal governments for the Bonneville, The Dalles, John Day, and McNary dams. The Wildlife Impact Assessments for the John Day and McNary Projects (Rassmussen and Wright, 1990b and d), provide estimated losses of 36,555 and 23,545 Habitat Units resulting from the John Day and McNary Hydroelectric facilities, respectively. Habitat losses included mainland, island, and river habitats. Mainland habitats, totaling an estimated 20,858 acres for the John Day facility and 12,898 acres for the McNary facility, consisted of shrub/steppe grassland, riparian hardwood, riparian shrub, riparian herb, emergent wetland, sand dune, sand/gravel/cobble/mud, disturbed/bare/riprap, and open water cover types. Approximately 6,708 acres of island habitats associated with the John Day facility and 2,741 acres associated with the McNary facility were impacted. In evaluating wildlife habitat losses resulting from the two hydro-projects, it was estimated that approximately 25,000 acres were impacted within the CTUIR Ceded territory. These losses represented the mitigation needs for the Bonneville Power Administration and the CTUIR.

In 1997, the "Memorandum of Agreement between the Confederated Tribes of the Umatilla Indian Reservation and the Bonneville Power Administration for Disbursal of Wildlife Mitigation Funds and Wildlife Mitigation Crediting (MOA)" was signed and implemented. The MOA defined the BPA/CTUIR agreements pertaining to existing and near future mitigation opportunities and crediting to BPA in terms of minimum habitat units. The MOA required that BPA provide funding resources for the CTUIR to support BPA's taking of protection, mitigation, and enhancement credits of 12,075 habitat units.

2) From the Executive Summary of the CTUIR Wildlife Mitigation Plan (October, 1997): "The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) developed this wildlife mitigation plan under the Northwest Power Planning Council's Fish and Wildlife Program to identify site-specific and generalized wildlife mitigation project opportunities to mitigate wildlife habitat losses resulting from hydropower development in the Columbia River Basin. The draft plan was completed and distributed for formal review to agencies, other tribes, and individuals in May 1996. Comments received on the plan are included in this final publication, along with responses, in Appendix A of the Mitigation Plan."

The mitigation plan is one component of a broader CTUIR effort to integrate watershed-level restoration of natural ecosystems combining wildlife, resident fish, and anadromous fish. The mitigation plan documents the wildlife mitigation planning and implementation efforts for the CTUIR's share of the Interim Washington Wildlife Mitigation Agreement. The Interim Agreement was negotiated between the wildlife agencies, tribes of Washington, and the Bonneville Power Administration (BPA) to provide funding for planning and implementation of wildlife mitigation projects in the State of Washington over a five year period (1993-1997). The total funding agreement was for $45.5 million dollars to be paid out in annual installments. The CTUIR is responsible for planning and implementing projects for 11.3 percent of this fund. In October 1994, the CTUIR contracted with the BPA to develop a mitigation plan for lands in Washington State that were ceded to the U.S. Government in the Treaty of 1855. In addition, the CTUIR also contracted with BPA in July 1995 to develop a Tribal wildlife mitigation strategy for northeast Oregon. This document integrates mitigation planning for CTUIR ceded lands in both southeast Washington and northeast Oregon.

The CTUIR is currently engaged in multiple efforts associated with restoration of the Columbia River Basin to restore all treaty resources and protect the rights of members of the CTUIR reserved under the Treaty of 1855. The CTUIR propose to implement wildlife habitat mitigation projects in the Columbia, Yakima, Walla Walla, Umatilla, and Upper Grande Ronde River Basins in northeastern Oregon and southeastern Washington which lie within the traditional homelands of the Umatilla, Cayuse, and Walla Walla Indian Tribes of the Columbia Plateau. The mitigation plan outlines how the CTUIR intend to carry out responsibilities under the Washington Interim Wildlife Mitigation Agreement and the Pacific Northwest Electric Power Planning Act of 1980. Mitigation projects implemented under this plan would be funded by the Department of Energy, Bonneville Power Administration and managed by the CTUIR. The CTUIR is a sovereign government with expertise in natural and cultural resource management and demonstrable abilities in implementing and managing wildlife mitigation projects in the Columbia Basin.

This document presents the purpose and need of the Plan, the study area evaluated, scoping and public involvement processes, the relationship of the plan to CTUIR Policy, other management plans and activities, and legislative direction regarding restoration of Columbia Basin resources that have been adversely impacted by hydropower development. A summary of the wildlife habitat loss assessments for the Bonneville, The Dalles, John Day, and McNary hydropower projects and associated evaluation species is also provided. The plan outlines the CTUIR's mitigation priorities and estimated Operations and Maintenance (O&M) and Monitoring and Evaluation (M&E) costs associated with the mitigation projects identified in the plan. Finally, the plan outlines the process for development and implementation of individual projects, conducting HEP analyses to determine habitat condition and the number of habitat units achieved, potential habitat enhancements and associated costs, and monitoring and evaluation of project management and enhancement.

Scoping with the CTUIR Board of Trustees, the CTUIR Fish and Wildlife Committee, Tribal General Council, and Tribal staff resulted in the identification and prioritization of the mainstem Columbia, Yakima, Walla Walla, Umatilla, and Upper Grande Ronde River Basin to implement wildlife mitigation projects. The CTUIR has considered wildlife mitigation projects both on and off-site and primarily in-kind. The plan identifies mitigation priorities based on objectives and goals of the CTUIR, the Pacific Northwest Electric Power Planning and Conservation Act, the Northwest Power Planning Council's Fish and Wildlife Program, and the Washington and Oregon Wildlife Coalitions.

The following criteria were used in consideration of various mitigation project focus areas: 1) onsite (within the Columbia River corridor, 2) proximity to the Umatilla Indian Reservation, 3) type and quality of habitat and resources that could be conserved and/or enhanced, 4) current threat from existing or future land-use practices, 5) manageability, 6) ability to contribute to regional and local biodiversity and secure dual benefits for fish and wildlife, and 7) potential to benefit habitat and species impacted by hydropower development in the Columbia River Basin. Coordination with the Washington Department of Fish and Wildlife and Oregon Department of Fish and Wildlife has also been accomplished during the development of this Plan in order to ensure consistency with other mitigation efforts in the region. County government planning staff have been contacted to open lines of communication regarding the CTUIR's wildlife mitigation efforts and to begin the process of developing cooperative efforts in individual areas.

3) While the Squaw Creek Wildlife Project is off-site (on-site project opportunities are extremely limited), it did meet criteria 2 – 7 as presented above, and was therefore a high priority within the CTUIR Wildlife Mitigation Program.

The Squaw Creek Wildlife Project was developed by the CTUIR to offset habitat losses related to the John Day and McNary hydroelectric projects. The project area is located outside the Columbia River corridor, and therefore provides off-site mitigation. However individual habitat types and species impacted by hydroelectric development will be addressed by this project, therefore in-kind mitigation will be provided.

The project area encompasses nearly the entire Squaw Creek watershed, excepting corporate timberlands outside the diminished Reservation boundary, and adjoins the Umatilla National Forest on the east boundary of the project area. Within the Umatilla Indian Reservation boundary, the property contains approximately and 958 acres of floodplain riparian habitat, 8,042 acres of grasslands, 4,898 of forested environments, and 1,409 acres of upland shrub. Other minor cover types include agricultural lands, rock outcroppings, and talus slope.

Target wildlife mitigation species include great blue heron, yellow warbler, mink, Western meadowlark, black-capped chickadee, and downy woodpecker. Suitable target species also included in the habitat evaluation as recommended by the inter-agency HEP team include mule deer and blue grouse. An estimated 3,832 baseline Habitat Units (HU's) for target wildlife species were protected through acquisition. An additional estimated 5,554 HU's could be achieved through habitat enhancements developed in the management plan. Estimated total benefit of the project expressed through HU's is 9,386 units.

**Project: 9506425 Ykfp - Wdfw Policy And Technical Involvement In The Ykfp**
Sponsor: Washington Department of Fish and Wildlife

CBFWA tier: 1
ISRP review: Delay funding until the authors justify why this should not be covered under indirect costs from other proposals in project 20510. The set of proposals needs to be reorganized to explicitly address the two stated objectives to test supplementation and to provide a harvestable surplus.

ISRP Comment/Question: This proposal emphasizes the process of adaptive management but does not identify the specific experiments that are being tested, the management response that has/will be made, or the criteria that will be used to determine if management changes are needed.

Response: The ISRP is correct in noting that this proposal emphasizes the process of adaptive management. Management of the process is in fact what is being proposed for funding. As such, there is no experimental design presented and no hypotheses stated. These elements are stated more appropriately in project 9506325 of the Yakima/Klickitat Fisheries Project Umbrella. The various experimental hypotheses are developed in detail in the Yakima Fisheries Project Spring Chinook Supplementation Monitoring Plan (Busack, et al., 1997, 185 pp).

It is problematic, and possibly inappropriate for the ISRP to attempt to evaluate project management proposals in a format designed for research proposals. It is probably not reasonable to expect to see hypotheses, experimental designs, and statistical treatments in a proposal that is directed at "participation" in a management process.

ISRP Comment/Question: This proposal is a description of the current bureaucratic structure. It does not discuss the need or problem solved by this structure.

Response: The current "bureaucratic" structure is in response to a need identified by the NPPC (letter Trulove to Blum, August, 1990) to "complete and adopt a long-term management structure for the project". The current structure including a policy and technical representative from the Yakama Indian Nation and the WDFW and a standing committee of dedicated scientists is the agreed-upon response to the NPPC. This project structure was adopted by MOU between the Yakama Indian Nation and WDFW in 1994.

ISRP Comment/Question: It is awkward to review the management portion of supplementation as a distinct subproposal.

Response: The managers have been criticized for submitting individual subproposals and for combining proposals together. It would be helpful for both the ISRP and the project proponents if a consistent approach could be described. The current conflicting directions and subsequent dissatisfaction with the product suggests that the ISRP is operating by trial and error and subsequently penalizing proponents for missing the target.

ISRP Comment/Question: The staff proposed for this work has primarily technical expertise associated with data analysis or hatcheries. There seems to be little ecological expertise represented.

Response: The staff represented in this proposal is serving as policy and technical managers of the YKFP. Please note, however, that these individuals have expertise and experience in project management, harvest management, marine biology, fish behavior, genetics, hatchery/wild interaction, hatchery research, and hatchery design and planning, as demonstrated in their attached resume's. These managers in turn have access to scientists with expertise in genetics, ecological interactions, modeling, reproductive ecology, natural production evaluation, and several other fisheries-related disciplines.

ISRP Comment/Question: Like most of the other projects in this group, this proposal provided only minimal background or technical detail on the fishery problems that it was to address. These had to be inferred by reading other proposals within this group or relying on the reviewer's previous knowledge.

Response: This proposal was not intended to address a fishery problem. As noted above, this is a proposal to fund the participation of the managers in the approved project management structure of the YKFP as directed by the

NPPC. It is not clear what advantage there would be to repeating all scientific and technical detail in each subproposal rather that limiting that presentation to the specific proposal in which funding was proposed.

ISRP Comment/Question: The technical background on the need for project management and decision making was logical but lacked any citations or documentation.

Response: Proponents were not allowed to provide attachments for documentation but four citations were provided that described the need for a project management and the decision making process.

Bonneville Power Administration, 1996, Yakima Fisheries Project Final Environmental Impact Statement, Portland, OR.
Yakima/Klickitat Fisheries Project, 1995, Yakima/Klickitat Fisheries Project Planning Status Report, Volume 3, Spring Chinook Salmon.
Brusett (NPPC) letter to Jura (BPA), attachment 2, Task 8, 1987.
Trulove (PPC) letter to Blum (WDFW), 1990.

ISRP Comment/Question: The major criticism of this proposal is that it is not clear how success will be measured. The proposal has an adequate description of the progress reports and planning documents that are produced, but it defines success by "effective participation" without any elaboration on what that means.

Response: As stated in the proposal and in the first response above, this subproposal is not amenable to quantifiable objectives or experimental protocols, as would be the case for a production or research proposal. As a consequence, the proponents used the term "effective participation" to acknowledge that this activity is participatory in nature. Successfully accomplishing the project management tasks as outlined on pages three through five of the proposal would constitute effective participation.

ISRP Comment/Question: Why aren't these activities covered by the indirect costs?

Response: Indirect costs are negotiated between the federal government and the WDFW. Since indirect costs equal about 17 to 20% of the project costs, they could not cover this project's costs.

**Project: 9506700 Colville Tribes Performance Contract For Continuing Acquisition**
Sponsor: Colville Confederated Tribes, Fish & Wildlife Department

CBFWA tier: 1
ISRP review: Do not fund. Proposal is technically inadequate. Proposers need to describe their plan, the specific properties they plan to protect, specific benefits to fish and wildlife, and criteria to prioritize potential acquisitions.

ISRP Comment/Question: Do not fund. Proposal is technically inadequate. Proposers need to describe their plan, the specific properties they plan to protect, specific benefits to fish and wildlife, and criteria to prioritize potential acquisitions.

Response: Based upon the proponent's presentation this project was ranked sufficient to receive partial funding toward meeting its project objectives.

ISRP Comment/Question: The proposal is attractive for its attempt to acquire conservation rights to lands adjacent to those already set aside for conservation purposes. This has the potential to significantly increase the value of the conservation area. How important this is in relation to acquiring disjunct lands that may benefit a different suite of species, however, is not addressed in the proposal.

Response: The plan is really quite simple. The Colville Tribes lost over 24,000 acres of valuable wildlife habitat through construction and inundation for the Grand Coulee and Chief Joseph Hydro projects. They are attempting to acquire the management rights to enough land that with annual operation and maintenance and enhancements will mitigate for those losses.

ISRP Comment/Question: Sponsors seek $1.5 million, but give no detail on the properties they propose to acquire and neglect to describe criteria to prioritize acquisition of properties.

Response: The proposers are looking at several properties that are or may be coming up for sale. However when this proposal was submitted the earliest funding date was about 10 months away. It was not known what amount, if any, of the request they might received. Some of the properties might have been off of the market by the time the funds were available. Therefore, the project sponsors do not feel that they can honestly list specific parcels as being the ones they are going to acquire. Therefore it is also very difficult to present just exactly what wildlife benefits are to be obtained.

Criteria to prioritize potential acquisitions have been followed since they started the project. Specifically, they include: protect and enhance wildlife values; importance to wildlife (assure management control of property that is currently providing or is capable of providing good to high potential for wildlife habitat in its existing state or through enhancement); current winter range or other critical habitat that is subject to loss through development or changes in land use that would take it out of wildlife habitat; proximity to other lands owned by the Tribes or presently used and needed for wildlife habitat; proximity to Lake Roosevelt or Lake Rufus Woods; value for fish as well as wildlife; size of property (it in itself is large enough to be a core area); property that provides unique wildlife habitat values that are key to the survival of a species.

ISRP Comment/Question: The proposal should describe the conservation easements, etc, to be placed on the lands.

Response: The type of conservation easements was not described since they will probably be purchasing the land, however easements will not be ruled out if the opportunity arises.

ISRP Comment/Question: What was accomplished with last year's $150k budget?

Response: This proposal was submitted in December of 1998. At that time, there was still ten months remaining in FY99. A total of $1.5 million was requested for FY 98 and only ten percent of this amount was allocated for this project. Therefore, some major revisions were made to the plans and results were unavailable to report at that time.

**Project: 9600600 Facilitation, Technical Assistance And Peer Review Of Path**
Sponsor: ESSA Technologies Ltd.

CBFWA tier: 1
ISRP review: Do not fund. PATH, in its present form, with its present mission, should be phased out. A simpler process could be created to meet the continuing need for evaluation of the limited data now available to address management questions relative to the hydro biological opinion. A more ambitious and comprehensive scientific consensus process should be developed, somewhat along the lines of PATH, to address data collection design issues for the basin, to identify data needs that are critical to the actual management questions, and to ensure that data needs are met, to the extent practical, as quickly as possible, in a coordinated and efficient manner.

ISRP Comment/Question: This proposal does not clearly describe PATH organizational structure. Historically, there was a need for facilitation of some sort of scientific consensus process with respect to modeling. But with respect to the original question, deciding between two competing passage mortality models, the answer has been delivered: the available data, evidently, cannot discriminate between the models. To continue PATH, there needs to be a definition of a new mission. Logically, if the available data are not sufficient to answer the management questions, the focus of scientific consensus building in the basin should shift to design of data collection programs that will deliver data that can answer the questions. In some ways, the facilitation, participation, consensus, and advisory structures evolved by PATH can serve as useful models for the future. But it is not a foregone conclusion that the exact structure and personnel of PATH should be replicated in toto for addressing the new mission. Given the limitations of the data available to PATH, there are concomitant limitations on the conclusions drawn by PATH. To this extent, the PATH process has not simplified the information for policy makers.

Response: The PATH organizational structure was described in the proposal, and can be further clarified. PATH is deliberately iterative, with multiple cycles of hypothesis formulation, analysis, reporting and review, at four

different levels: analytical subgroups (generally 2-3 people), multi-agency workgroups (6-10 people), PATH participants as a whole (25-30 participants), and the PATH Scientific Review Panel (4 independent scientists). All PATH reports are available on the BPA web site: www/bpa.gov/Environment/PATH, which provides additional peer review.

Many of the above comments have already been addressed and rebutted in the main body of the FY2000 DAIWP. The "new mission" is PATH's third objective, already proposed, with revised membership and roles. Two other comments do however need to be addressed here. First, the ISRP refers to "facilitation of some sort of scientific consensus process." Contract #9600600 actually supports six different functions in PATH (as described at the beginning of this memorandum), of which facilitation is only one. The strict adherence to evidence in formulating alternative hypotheses for a formal decision analysis is much more than "some sort of scientific consensus process." Again, the ISRP appears to have oversimplified the functions presented in the proposal.

Second, the project sponsor disagrees very strongly with the statement: "the PATH process has not simplified the information for policy makers." Prior to PATH, different scientific groups, funded by different agencies, would make presentations to the NWPPC and other policy groups; recommending different management actions based on separate analyses. At the early stages of designing PATH, the NWPPC told us "it's like driving with two backseat drivers, one of whom tells you to turn left, the other right." The integrated decision analysis developed by PATH (with consistent data sets input to different models) provided a quantum leap in the quality of information available to decision makers.

Finally, the project sponsor agrees with the ISRP that the sub-proposals were not as well integrated as they could have been. During November 1998 all PATH scientists were very busy working on the PATH FY98 report, and could not devote as much time as required towards a better integration of the sub-proposals. This deficiency should be corrected.

Over the last three years of PATH, ESSA's roles have gradually expanded, and now include: 1) facilitation of workshops and technical meetings; 2) coordination of PATH tasks, with the PATH Planning Group; 3) technical analyses on behalf of PATH, particularly related to decision analyses; 4) integration, writing, production and distribution of PATH reports; 5) presentation of PATH results to the Implementation Team, Northwest Power Planning Council, and general public; and 6) administration of 8 subcontracts (4 PATH Scientific Review Panel (PATH SRP) members, SRP coordinator, and 3 independent scientists).

The four PATH SRP members are responsible for external peer review of PATH products, and also served in 1998 as an expert panel to review the PATH Weight of Evidence report (Drs. Barnthouse, Walters, Saila, Collie, and Carpenter/Kitchell). Since 1995, the PATH SRP has logged 128 days of review time, reviewed over 3000 pages of reports, and made major contributions to the scientific credibility of PATH products. Advances in PATH analytical methods are catalyzed through the participation of three independent scientists with special expertise in Bayesian statistics, decision analysis and conservation biology (Drs. Deriso, Peterman, and Botsford). These three independent scientists also provide internal peer review on PATH methods and assumptions by active participation in meetings. Facilitation of PATH involves consideration of the direction received from the Regional Forum Implementation Team (I.T.) and PATH SRP, as well as the recommendations of PATH participants.

**Project: 9600700 Irrigation Diversion Consolidations & Water Conservation; Upper Salmon R**
Sponsor: Lemhi County Soil & Water Conservation District

CBFWA tier: 1
ISRP review: Delay funding until they can demonstrate that the water saving will be secured for instream use, through filing of instream water rights and monitoring of those rights.

ISRP Comment/Question: Delay funding until they can demonstrate that the water savings will be secured for instream use, through filing of instream water rights and monitoring of those rights.

Response: The recommended “delay funding” until water savings will be secured for instream use cannot be accomplished under the State of Idaho water law. The water saving by consolidation results from less conveyance loss and alternating use days by the irrigators. The water saving would be real but not secured by a water right.

This is a cooperative proposal between the Bureau of Reclamation, Lemhi Model Watershed, NRCS, and IDFG. The existing problem is four large push-up diversion dams forcing down stream migrant fish into each of the 4 irrigation diversions. This delays smolt migration from a few hours to 4 days. It also obstructs and creates a hazard to recreational users on the Salmon River. Fish diverted from the upper ditch, are by-passed into the three succeeding canals down river. The proposal is to consolidate the 4 diversions into two, thus eliminating two diversion dams, two head gates and two fish screens. The two remaining diversion dams would be oriented up river, rather than across the river. They would be built of reinforced sheet piling to eliminate the need of irrigators to push stream gravel each year and would not divert as many fish. The gravel would no longer wash down river each high water event causing down river stream channel aggravations.

To resolve the problem the Idaho Department of Fish and Game, Bureau of Reclamation, and Lemhi County Soil and Water Conservation District agree the Anadromous Fish Screen Program should take the lead role. This project will resolve any unfinished issues with the irrigators, design, construct and supervise the construction of the two fish screens, ditch consolidations and any splitter controls to control the water. The alternative solution is to modify the four fish screens to NMFS criteria and retain the problem diversion structures and associated fish migration delays. The cost to construct four fish screens would be approximately $250,000 compared to $100,000 for two screens. The $150,000 saved would cover the cost of one diversion and headgate improvement. The sites have been surveyed by the USBR surveying crew. They will design the two diversion dams, and head gates. The Lemhi Soil and Water Conservation District will contract the construction of the dams and head gates.

ISRP Comment/Question: This is not a watershed proposal; this is implementation of irrigation screening.

Response: This project is linked to project 9401500, whereby four large push up dam diversions will be eliminated and consolidated into two permanent structures, with screens which meet the new NMFS criteria. The fish and wildlife managers and NPPC have consistently supported fish screening projects and consider these to be watershed projects.

ISRP Comment/Question: There was no evidence of fish losses presented to justify proposal.

Response: Previous fish monitoring at the by-pass outflow to the river verify fish are diverted multiple times at these four consecutive irrigation diversion dams. The fisheries benefits are numerous, less migration delay time, the majority of the down stream migrants will not be diverted in the first place as they are force to do now.

ISRP Comment/Question: There was no indication that other agencies (esp. IDFG) feel that this is a high priority project that justifies its substantial cost.

Response: The cooperative participants rank this a high priority project as evidenced by its ranking of Tier 1 by the CBFWA review process. The IDFG is the founding agency for this project and a portion was transferred to BOR for engineering design and landowner coordination. The BOR will provide the NEPA engineering and design and the IDFG will provide contract management and screens, with a total cost share of around $150,000 per agency. Recommended level of funding: Screen Shop fabrication (supplies and materials) $150,000, Cultural survey on BLM $7,000, Contract civil works $531,200, Indirect cost $34,410, for a Total of $722,610. All labor, engineering, design, easements, flow agreements, permitting and construction inspection will be State of Idaho and USBR funds.

**Project: 9600800 Stufa Participation In A Plan For Analyzing And Testing Hypotheses (Path)**
Sponsor: Oregon Department of Fish and Wildlife

CBFWA tier: 1
ISRP review: Do not fund. PATH, in its present form, with its present mission, should be phased out. A simpler process could be created to meet the continuing need for evaluation of the limited data now available to address management questions relative to the hydro biological opinion. A more ambitious and comprehensive scientific

consensus process should be developed, somewhat along the lines of PATH, to address data collection design issues for the basin, to identify data needs that are critical to the actual management questions, and to ensure that data needs are met, to the extent practical, as quickly as possible, in a coordinated and efficient manner.

ISRP Comment/Question: The need for Stufa participation is not very well identified in the proposal. Plans for evaluation of results and identification of measurable objectives are poorly developed. The contribution of the personnel to the project is poorly described. This proposal repeats the information from the umbrella proposal and does not provide adequate information on results to date and their input into the PATH process.

Response: The past contribution of STUFA members to specific method development, data analysis, and measurable objectives are identified through out the numerous reports produced by PATH (see reference section pages 7-9 9600800 FY2000). The following provides more specifics of STUFA member task assignments for FY 2000. In FY 2000, the STUFA members of Oregon, Washington and USFWS (which have explicit knowledge of these populations) will be developing data sets for analysis of Lower Columbia River populations. The STUFA members of CRITFC, Washington and USFWS (which have explicit knowledge of these populations and have developed retrospective analyses for a number of these populations) will be developing data sets for analysis of Upper Columbia River populations. The STUFA members of Oregon, Idaho, Washington and USFWS will be updating spawner-recruit information and smolt to adult return rate information for Snake River, lower and upper Columbia River populations. The experimental management approaches (proposed by PATH for FY 2000) is a series of planned deliberate actions, which provide enough contrast to increase the rate of learning. This is accomplished by reducing confounding effects of multiple actions, with the goal of improving future management actions while maximizing the ability to conserve and recover populations of interest. The Oregon, Idaho, and CRITFC members will be working on experimental management (EM) tasks 1-3 (FY 1998 report chapter 6): to define with the IT hydrosystem and other H's (harvest, hatcheries, and habitat) management actions; clarify key uncertainties; help define EM options with the IT; work with region on feedback to proposed EM options; and assess general benefits of experimenting versus not experimenting. The Oregon, CBFWA, and Idaho members of STUFA will be working on EM task 4 to simplify the models in order to develop tools for quickly evaluating experimental management options. Also under EM task 4, the STUFA members of Oregon, Idaho, CRITFC, and USFWS will be developing experimental management assessment tools. All the STUFA members will work on EM task 5, which will evaluate proposed management actions with and without EM options in terms of risk to populations versus the amount of learning possible. The CBFWA, Oregon, Idaho, and Washington members working on EM task 6 will be developing techniques and evaluating management actions for the other H's (harvest, hatcheries, and habitat) and across populations (Snake, Upper Columbia, and Lower Columbia salmon and steelhead populations). All STUFA members will be working on EM task 7, which uses the results of the EM evaluation to design the research, monitoring, and evaluation programs to reduce key uncertainties for Snake River salmon recovery.

**Project: 9601100 Walla Walla River Juvenile And Adult Passage Improvements**
Sponsor: Confederated Tribes of the Umatilla Indian Reservation

CBFWA tier: 1
ISRP review: Fund for one year. Subsequent funding contingent on independent review of a comprehensive plan that shows priority of sites and actions.

ISRP Comment/Question: As with the Umatilla Subbasin effort, the individual portions of the Walla Walla River effort are not stand-alone projects. They need to be reviewed in the context of an umbrella plan that provides a larger context for these proposals.

Response: Several plans have been developed to address long-term restoration priorities in the Walla Walla River Basin. Each of these documents defines issues limiting salmonid production throughout the basin and provides guidance for restoration activities. They include the Walla Walla Subbasin Plan (CTUIR 1990), Wy-Kan-Ush-mi Wa-Kish-Wit, Tribal Restoration Plan (CRITFC 1995), Walla Walla Basin Reconnaissance Report (COE 1997), and CBFWA FY 2000 Annual Implementation Work Plan (updates). In addition, the CTUIR has subcontracted to Washington State University for a Watershed Assessment to be completed in January of 2000.

The CTUIR also reviews and prioritizes projects through each of the following forums:

1. The Walla Walla Watershed Council, composed of area landowners and various agency staff including the CTUIR, Oregon Department of Fish and Wildlife (ODFW), Washington Department of Fish and Wildlife (WDFW), Corps of Engineers (COE), Bureau of Reclamation (BOR), Water Control District, and the Oregon Water Resources Department (OWRD). This group meets monthly to discuss and find solutions to issues impacting water quality and survival of salmonid fishes within the basin.

2. The Walla Walla River Operations, composed of agency staff from CTUIR, ODFW, WDFW, OWRD, Walla Walla Watershed Council, and Hudson Bay and Walla Walla Irrigation Districts. This group identifies problems and solutions related to surface water use and related passage conditions for migrating and rearing salmonid fishes. Examples include irrigation withdrawal timing, fish ladder operation, and various other operating criteria associated with irrigation dams/ditches.

3. Regional Salmon Committee composed of staff from CTUIR, WDFW, Washington Department of Ecology, and Columbia and Walla Walla Conservation Districts. This group prioritizes projects to be implemented and funded in the Washington portion of the Walla Walla River Basin. Much, although not all, of the efforts related to this group are targeted for funding from House Bill 2496 and the Governor's Salmon Funds provided by the State of Washington.

**Project: 9604300 Johnson Creek Artificial Propagation Enhancement Project**
Sponsor: Nez Perce Tribal Fisheries/Watershed Program

CBFWA tier: 1
ISRP review: Delay funding until clear scientific evidence is provided that this project is a high priority in the Salmon River drainage.

ISRP Comment/Question: It was difficult to assess the priority of spending $3 million to initiate artificial propagation - this is a major policy issue, not really a scientific or technical one.

Response: The policy issue regarding this project has been addressed through *US v. Oregon* and other forums. The project is being reviewed through the Northwest Power Planning Council's 3-step process. This process provides the opportunity to further review by fisheries managers in the Basin.

ISRP Comment/Question: Are there potential significant benefits in creating a new facility versus continuing to use the existing facilities at McCall.

Response: There are no potential significant benefits of creating new rearing facilities at the existing McCall Fish hatchery. However, the existing hatchery does not have the capability of rearing any Johnson Creek fish when they are at full production. When not at full production the current facilities would allow for partial JCAPE smolt production. However, production goals have been achieved regularly with only occasional shortfalls. In order to meet the supplementation goals of the JCAPE project, additional facilities are needed at the McCall Fish Hatchery. In addition, the new facilities will allow for the incorporation of NATURE's concepts (Maynard et al. 1996) into the design of the facilities.

ISRP Comment/Question: The proposal does not convince the reviewers that this is the best location for this activity relative to other locations in the Salmon River basin. It may be, but this is not described in enough detail. The authors cite a letter from NMFS toward this point, but do not describe the contents. Why is this a priority area?

Response: The Johnson Creek spawning aggregate has experienced significant decline in returning adult numbers over the past five decades. Escapement levels in Johnson Creek have declined from a high of 486 redds in 1960 to a low of five (5) redds observed in 1995. Recruit to spawner values for Johnson Creek from 1985 to 1992 (after PATH analysis) show only two (2) years with a recruitment above the replacement value of one (Kucera 1998). The Johnson Creek spawning aggregate is in significant decline, at low levels of abundance and high demographic risk of extirpation.

The South Fork of the Salmon River and two of its tributaries constitute the three major spawning aggregates and are at demographic risk of extirpation. The three aggregates include the South Fork of the Salmon (supplementation stream), Lake Creek/Secesh River (control stream), and Johnson Creek (supplementation stream). The stock status of Johnson Creek as shown above is at a high risk of extirpation and some action will be required to increase the survival of this spawning aggregate to prevent extirpation of this stock.

Supplementation programs for Snake River summer chinook salmon are supported by Snake River Recovery Team recommendations (SRSRT 1994), NMFS (1995) draft recovery plan, and the *Spirit of the Salmon* (CRITFC 1996). The NMFS draft recovery plan (NMFS 1995) states that "captive broodstock and supplementation programs should be initiated and/or continued for populations identified as being at imminent risk of extinction, facing severe inbreeding depression, or facing demographic risks." Demographic risks are of the greatest concern to the Johnson Creek stock. The JCAPE project is a high priority project that has been in the planning process since the early implementation plan (EIP) process through the Bonneville Power Administration. It has received a high priority ranking by the salmon managers through the Columbia Basin Fish and Wildlife Authority (CBFWA) and has been reviewed and recommended through *U.S. v. Oregon* Production Advisory Committee process (Rosen 1996). In a letter from William Stelle of NMFS to John Etchart of the Northwest Powere Planning Council (Stelle 1996), NMFS' agrees with the *US v. Oregon* Production Advisory Committee recommendation that these projects be funded and implemented. In addition, it states that the Johnson Creek project is deemed as critical to the recovery of ESA listed salmon.

ISRP Comment/Question: Funded work in the past has been collecting baseline life history information on Johnson Creek chinook (to examine survival of wild fish) but no results are presented.

Response: The JCAPE project was funded in 1997, and included hiring personnel to initiate the Operations & Maintenance (O&M) portion of the project. The Monitoring & Evaluation (M&E) portion of JCAPE was initiated with hiring of personnel in the spring of 1998. Collection of baseline life history information on Johnson Creek did not commence until late May 1998. Therefore, data was still being collected and the annual report was not completed at time of the time (December 1998) of FY2000 Budget Proposal submital. Subsequent, JCAPE FY Budget Proposals will include results from the collection of baseline information on Johnson Creek.

ISRP Comment/Question: The authors propose to use the NATUREs concepts in rearing and releasing smolts, but failed to describe or reference the NATURE's program.

Response: This project is currently in the preliminary design phase, therefore, at this time, the following NATURE's concepts (Maynard et al. 1996) are being proposed for implementation. Decreased rearing densities, cryptic coloration, use of submerged substrate, overhead and instream cover, modified feed delivery systems and the use of live feeds, and acclimated releases. As design plans for facilities are finalized, additional NATURE's concepts (Maynard et al. 1996) may be implemented.

ISRP Comment/Question: The proposal needs better expressed goals and a timeline.

Response: The primary goal of the Johnson Creek Artificial Propagation Enhancement (JCAPE) project is to prevent the extirpation of and begin restoration of the wild/natural spawning aggregate of summer chinook salmon in Johnson Creek. The Supplementation and Monitoring and Evaluation goals of the project is adequately described on page 17 of the FY2000 funding proposal.

To meet the overall and supplementation goals, the Nez Perce Tribe proposes to produce 300,000 summer chinook salmon smolts annually for final rearing/acclimation and volitional release into Johnson Creek. Rearing of progeny will occur at the McCall Fish Hatchery with final smolt acclimation occurring at Johnson Creek.

The timeline described in the FY 2000 funding proposal primarily focuses on the implemation of specific actions over the life of the project. As information is collected and synthesized in regards to each objective, timelines will be refined and further developed.

ISRP Comment/Question: Visible implant tags are proposed for large-scale use in the study in spite of recent studies in Montana (N. Amer. J. Fish Mgt 16 [4]) that indicate substantial tag loss associated with this technique.

Response: The article referenced does indicate a high rate of tag loss for individually coded alphanumeric Visual Implant (VI) tags. However these are not the same tags that were chosen for use on the JCAPE project. The tags that were chosen are Visual Implant Elastomer (VIE) tags and are not individually coded like the VI tags but consist of an two-component polymer that is combined just before use (Northwest Marine Technology, Inc., Shaw Island, Washington). This flourescent elastomer material has better retention rates than the individually coded alphanumeric VI tag because they can be fluoresced with the aide of a ultraviolet light source. These tags do not allow for individual identifications but different colors are used to delineate different brood years and allow for recognition by brood year (which is the resolution needed for this project). These tags will be used for external identification of spawning adults returning to Johnson Creek to aide in correct implementation of the spawning matrix outlined in the JCAPE Broodstock Management Plan (Mavros and Gebhards 1999 draft). VIE tags do not have 100% retention, however, given the options available they are the most practical external visual tag available. In addition, all fish will be 100% coded wire tagged (CWT), so there will be an identifying mark for all Johnson Creek fish. Dewey and Zigler (1996) tested this tag on juvenile and adult bluegill and Bonneau et al. (1995) tested this tag on juvenile and adult salmonids and found very high rates of retention (up to 99%).

ISRP Comment/Question: Most of the methods are thoroughly presented. There are a few vague points, such as (p. 20, lines 2-3) the method for calculating parr (abundance?) and survival estimates is not described.

Response: Parr densities will be calculated for each stratum using methods described in Schaeffer et al. (1979) and Shepard (1983). Survival estimates will be calculated using Surph.1 program (Smith et al. 1994).

ISRP Comment/Question: Budget warrants further scrutiny.

Response: The budget for the JCAPE process is evaluated through several ongoing processes. A general evaluation of funding level is completed by CBFWA SRT. A detailed examination of the construction costs is required in the Councils 3-step process as a value engineering review. Final bugetary review is provided by the BPA COTR at time of contract establishment.

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**Project: 9605300 Upper Clear Creek Dredge Tailings Restoration**
Sponsor: USDA Forest Service, Umatilla National Forest; Confederated Tribes of the Umatilla Indian Reservation

CBFWA tier: 1
ISRP review: Delay funding until potential adverse side effects of fine sediments and contaminated sediments, details on monitoring for use by salmon and steelhead, and details on their engineering plan are provided. (low priority)

ISRP Comment/Question: Among four objectives listed by the author(s), few details are offered to explain how restoration is to be conducted, for what specific purposes, and with what analysis.

Response: Dredge mining that took place approximately 50 to 60 years ago created the existing condition. The miners moved into this drainage with an assortment of heavy equipment designed to move earth and rock. First the overburden was bulldozed to the edge of the valley bottom. This overburden which is valued as a riparian component today lost all habitat value. In many places these piles of earth are still present. With the overburden out of the way, a dredge was moved in to dig down through the gravel, cobble, and small boulder to get to bedrock where the gold was expected to be found. What the project sponsor would think of as the essence of physical stream structure and fish habitat; gravel, cobble, and small boulder, was thought of as reject material by the miners. The reject was left in piles as the dredge slowly migrated across the floodplain. The dredge worked the entire valley bottom, not just the area that was the stream channel at the time of the operation. The end result was enough gold to pay wages and keep the miners looking for more wealth and a valley bottom that has literally been turned upside down. No meaningful reclamation was attempted when the mining ended. Sixty years later, a river was found picking its way through cobble piles the size of a house. The river substrate is dominated by cobble because the gravel and fines had been washed away by an activity that probably turned the John Day and Columbia River brown all the way to Astoria. Time was not an effective healer of these wounds because the river did not have the basic elements of recovery to work with. The river lacked a floodplain because the stable cobble piles could not be moved by high flows. High flows were trapped in a narrow high velocity channel. The fines and organics that could start the rebuilding of a riparian area were transported through the dredge areas by high flows. Little natural recovery took place or could be expected in the future.

Our restoration efforts are designed to allow natural recovery to proceed by reestablishing a floodplain area that the river can access during high flows. When high flows can spread out over a floodplain the fines drop out and create

an area where riparian vegetation can grow. These areas are also a refuge for juvenile salmonids during high flows. The stream creates its own fish habitat given time and the basic elements of recovery.

Work on the National Forest requires an Environmental Assessment that documents the project purpose and need, key issues such as water quality and aquatic threatened and endangered species and their habitats, alternative development, and the environmental consequences (direct, indirect, and cumulative effects) of each alternative. Watershed Analysis was also completed for the Granite Creek watershed. Clear Creek is a tributary of Granite Creek. These documents are available for ISRP review. Perhaps it would be helpful for the ISRP to be on our Schedule of Proposed Activities mailing list to help increase their awareness of our project analysis process by participation through review and comment. The project proposal is just that, a summary of the proposed action after the analysis has been documented in the Environmental Assessment.

ISRP Comment/Question: Further, there is inadequate presentation of the intended engineering and landscape design techniques to be employed.

Response: It is not technically difficult to move rock. By using excavators to place the cobble and small boulder size rock in dump trucks and haul it to disposal sites. In the past, tailings have been disposed of by raising road subgrade, fill to recontour a hillslope during road obliteration, blended into the hillside well above high water, and reintroduced into the existing stream channel. The most effective way to dispose of the tailing piles that presently occupy this floodplain is to blend them into the hillside above the floodplain. The short haul makes for an economically efficient project. It is not possible to reintroduce the tailing material into the river channel at this site because of the concern for short-term effects to habitat for Mid-Columbia steelhead trout, a threatened species listed under the Endangered Species Act.

After the tailing piles have been removed it is often necessary to shape the floodplain using a small cat with a blade. The two-year high flow should cover the newly created floodplain. The hydrologist stakes the grade using rod and level. Overburden piles can be relocated to the newly created floodplain to speed riparian vegetation recovery when the soil is available. Native grass seed is also spread on the site to help trap and stabilize fines on the floodplain when spring high flows spread over the area. The newly created floodplain is an area of fine deposition and has been the site of rapid riparian vegetation growth on past project sites. The more floodplain complexity, the greater its ability to trap fines and build more complexity. The natural habitat and channel building process has started. This technique has been proven successful on nine miles of restoration completed (1992-1996) on the North Fork John Day River and documented in the USDA Forest Service R-6 Fish Habitat Relationship Technical Bulletin Number 5, September 1994, North Fork John Day Dredge Tailings Restoration Project.

ISRP Comment/Question: The project does not establish a relationship with other Bonneville activities.

Response: The Confederated Tribes of the Umatilla Indian Reservation are Co-Applicants on this project with the Umatilla National Forest. The project sponsor considers all activities proposed by the tribes and the Forest Service as being building blocks for watershed restoration. No project is intended to stand on its own to bear the burden of habitat restoration. Habitat degradation has been death by 1,000 cuts. Habitat restoration is healing those cuts one at a time. These relationships will be better documented in future proposals and could best be documented in a John Day Basin umbrella proposal.

ISRP Comment/Question: Monitoring plans for use by salmon and steelhead are inadequate.

Response: The Upper Clear Creek Dredge Tailings Restoration Project is not a study. It would be necessary to spend more money to study project effectiveness then it would take to do the project. The presently degraded project area reaches contain poor rearing habitat. There are few high water velocity refuges during spring high flows and little hiding cover during the winter or summer. The creation of floodplain where none existed; the resulting increase in channel complexity; the potential cooler summer water temperatures from increased riparian vegetation stream surface shade, and more productive winter rearing habitat will result in increased survival of rearing juvenile salmonids. The suggestion to coordinate with Project # 980160 Natural Escapement & Productivity of John Day Basin Spring Chinook and Project # 9703400 Monitor Fine Sediments and Sedimentation in John Day and Grande Ronde Rivers is well taken. Those proposals are for studies that are large enough in scope and for a long enough time that it might be possible to answer questions about natural production and escapement. It is not possible to

answer questions about natural projection and escapement by focusing on monitoring one small restoration project. The project sponsor felt it would be futile to include such a monitoring scheme in our project proposal. That is why our monitoring approach is to measure and document physical floodplain recovery.

**Project: 9607708 Protect And Restore The Lolo Creek Watershed**
Sponsor: Nez Perce Tribal Fisheries/Watershed Program

CBFWA tier: 1
ISRP review: Delay funding until the monitoring and evaluation plan is described in greater detail. This is not a scientifically adequate proposal. A comprehensive review of all habitat restoration activities in the Clearwater basin is needed.

ISRP Comment/Question: Delay funding until the monitoring and evaluation plan is described in greater detail. This is not a scientifically adequate proposal. A comprehensive review of all habitat restoration activities in the Clearwater basin is needed.

Response: A Clearwater Subbasin Peer Review Group/Advisory Committee is being developed by the Clearwater Subbasin Focus Watershed Program, which is comprised of the Nez Perce Tribe (NPT) and the Idaho Soil Conservation Commission (ISCC). The Clearwater Subbasin Focus Watershed Program will jointly coordinate this committee and is planning for the first meeting in September. The cooperating agencies tentatively include: Idaho Division of Environmental Quality, US Forest Service, Bureau of Land Management, Bureau of Indian Affairs, Nez Perce Tribe Fish Commission, Nez Perce Tribal Water Resources, Idaho Fish & Game, WSU, Idaho Department of Lands, Potlatch Corporation, Plum Creek Corporation, and private landowners. The responsibilities of this committee will include prioritizing watersheds and restoration projects, discussing cost sharing, performing information dissemination, and technical review. This Clearwater Subbasin Peer Review Group/Advisory Committee follows direction of the NPPC's Columbia River Basin Fish and Wildlife Program, Section 7.7A.1, Coordination of Watershed Activities.

A comprehensive review/watershed assessment of the Clearwater River Subbasin is currently underway and is targeted for completion in June 2000. The NPT and the ISCC are the lead agencies on the project, and Washington State University (WSU), Center for Environmental Education is the subcontractor for compiling data and technical and scientific review of the assessment. The Clearwater Subbasin Peer Review Group/Advisory Committee will oversee and contribute in completing this effort as guided in Section 7.6C Coordinated Habitat Planning, Watershed Assessment, of the NPPC's Columbia River Basin Fish and Wildlife Program.

This project was initiated as part of the Early Action Watershed Program in the Clearwater Subbasin. The initial prioritization process was started with the completion of the Clearwater River Subbasin Salmon and Steelhead Production Plan in 1990, and further prioritized by the Nez Perce Tribe and the U.S. Forest Service in the following years. This project was selected by the NPT, and funding was made available through the NPPC Early Action Watershed Program for implementation.

The effectiveness and success of the project will be documented by two monitoring and evaluation (M&E) projects. The first M&E project focuses on road obliteration effectiveness. This project was initiated in 1998. The second M&E plan will address the issue of long-term fish population recovery and is currently under development. This plan will be coordinated with the umbrella monitoring and evaluation plan currently being developed by the NPT co-coordinator as part of the Clearwater Focus Watershed Program (part of FY99 activities).

The Road Obliteration Effectiveness Plan is implemented in cooperation with the Clearwater National Forest (CNF) and was initiated in 1998. This plan was developed as a guide for monitoring obliteration treatments. It involves monitoring and evaluating 5% of all road obliteration that has taken place in the Forest. One-fourth mile monitoring segments are established in a variety of areas with different characteristics, concentrating on the most difficult road obliteration sites. Information collected includes cross-sections, pebble counts, vegetative growth, erosion control blanket installation, photo points, mass failures, surface erosion, weir installation, slope stability, and mulch. The M&E process will occur for a minimum of two years and a maximum of five years or until it is determined that no additional significant changes will occur. This monitoring and evaluation will identify on-the-ground road

obliteration techniques and practices needing refinement, locate any additional maintenance or follow-up work, and monitor sedimentation from obliterated roads. This plan will allow us to maximize the benefits of adaptive management and continue to improve overall road obliteration success.

The second monitoring and evaluation plan is currently in development and deals with long-term effects over time. The cleaning and flushing of excess sediment loads through streams and tributaries is a long-term process with many variables, and for this reason this will be a long-term program. The first step is to determine the limiting factors to be monitored for watershed and fisheries values. The impacts of sediment on habitat functions necessary for spawning and rearing life stages of healthy fish populations with the focus of this plan. This project will include, at a minimum, monitoring sediment yield, cobble embeddedness, percent surface fines, percent fines by depth, turbidity/suspended sediment, pebble counts, and stream cross-sections. An extensive inventory will be made of mass failures and their causes throughout the analysis area after any large precipitation events. The data monitored will be evaluated for trends and possible conclusions on road obliteration and its overall impact upon fisheries habitat health.

The Clearwater National Forest collects much of the necessary monitoring data and has for many years. The plan will incorporate this historical and contemporary data, and then fill the gaps necessary for a complete monitoring plan. For comparison, data is planned to be obtained from restored watersheds, heavily impacted watersheds, and relatively pristine watersheds. The data collected will be analyzed for trends and any conclusions that may be used to improve the road obliteration program.

It must be understood that large episodic events lead to mass wasting from road related sources in steep forestland. Consequently, the watershed must be subject to a significant triggering event before the success of restoration efforts can be adequately evaluated (Williams, 1997). Since no major events have occurred subsequent to road obliteration activities, other than the previously discussed Pine Creek Project, it is too early to determine whether restoration has succeeded or failed.

Each of the monitoring plans will be adapted based on peer review from the Technical Advisory Group and to integrate with the umbrella monitoring evaluation plan being developed.

ISRP Comment/Question: The proposal also identifies stream bank stability as a habitat problem, and revegetation as the response. How much stream will be protected?

Response: Stream bank instability is a problem within the Brown's Creek watershed, a tributary to Lolo Creek. Approximately 500 feet of stream has unstable banks, which is proposed for stabilization in the FY2000. Re-vegetation will be a part of the response, but boulders, root wads, and recontouring of the banks will be included in the design. These stream bank stabilization projects will not only benefit the immediate unstable site, but will also benefit the habitat downstream, as sediment input to the stream will be reduced.

ISRP Comment/Question: About 13 miles of fencing have already been installed. How much (more, if any) fence will be built/repaired? How far is/will the fence be from the channel?

Response: Thirteen miles of riparian protection fence was constructed between 1997 & 1998. This fence is located at various distances from the channel, ranging from 100 feet to one-quarter mile, with appropriate water gaps in the fence line, where needed. The goal for a minimum stream buffer distance is 100 feet. For future riparian protection fencing projects, this will also be the riparian buffer goal.

ISRP Comment/Question: What is the evidence that planting is needed at all?

Response: According to the Northwest Power Planning Council's Fish and Wildlife Program, under no circumstance, should temperature ever exceed 60 degrees Fahrenheit for spawning and rearing habitat, and 68 degrees Fahrenheit (16 degrees Celsius). However, summer temperatures exceed both of these standard minimum temperatures. Riparian planting has been chosen as a means to immediately reduce in-stream water temperatures.

In addition to the shade that riparian vegetation will provide to the stream, the vegetation will act as a filter strip to buffer the stream from sediment, nutrient and pesticide inputs from adjacent croplands and help provide long-term bank stability in the riparian area.

ISRP Comment/Question: What is the present density of key or beneficial plants?

Response: Riparian areas in the Musselshell drainage have been moderately affected by human activities. Acting woody debris levels are low, and potential woody debris levels are rated as poor. Musselshell Creek is a tributary to Lolo Creek.

Past grazing management practices resulted in a reduction of vegetative streambank cover needed to control in-stream sedimentation, which results in excessive stream temperatures. The lack of adequate filter strip vegetation adjacent to riparian zones allows nutrients and pesticides from croplands to enter the stream. Loss of riparian zone also has a large effect on fisheries habitat by reducing in-stream shading, and increasing water temperatures and sedimentation.

ISRP Comment/Question: An M&E objective related to road obliteration is included, but reviewers cannot find mention of what roads, if any, have or will be retired.

Response: In 1998, 12 miles of roads were obliterated in the Musselshell Creek drainage. The roads obliterated include: 5142C, 5148, 540 G, 540 brain system, and the end of 540.

During the 1999 field season, the following roads within the Eldorado Creek drainage, a tributary to Lolo Creek, will be obliterated: Cedar Creek (5117, 5120 5120D, 5120A-T1, 73054, 73054-T1, 73055,5124A, 5124E, 5125A, 5125B, 73058, 5126-T2, 5132B, 5223C, 5124G, and P520), Opal/Snow Creek (5285, 5285B,5285D, 5024, 5285A, 5011, 5115C, 5115C-T1, 5115C-T2, and 5115M), Fan Creek (101E, 519D, 571, 572, 5107A, P519B, and 5007).

A total of 20 miles of road will be obliterated in 1999.

ISRP Comment/Question: Given that the fencing has already been accomplished, reviewers wonder why continuing expenditures of over $0.5M through 2004 are required.

Response: Certainly, thirteen miles of fence has been completed in the uplands, but there is approximately 20 additional miles of fencing projects remaining in the drainage.
Our goals is to accomplish 5-7 miles of riparian protection fence per year. In addition, this budget will be used for Monitoring and Evaluation of the fencing project.

In order to evaluate the effectiveness of fencing, our project plans to: visually examine the banks protected by the fencing before and after the fencing installation to look for active erosion indicated by rills, trails, and gullies; assess vegetation coverage, root depth, and diversity before tand following fencing along a “greenline transec” (a line near the water’s edge typically marked by continuous vegetation); monitor the generation of new growth about one meter bankward from the green line transect; and establish cross sections and a stream profile through the protected reach before fence installation and after. Steps 1-3 will be done once or twice a year and the resurvey portion of step 4 will be done near project completion, up to five years after fence installation. Since this project incorporates monitoring and evaluation from other on-going efforts in the watershed, this plan will incorporate the suggestions of the Clearwater Subbasin Peer Review Group/Advisory Committee, referred to earlier in this document. The project leaders will implement adaptive management strategies to insure that activities are cost-effective.

ISRP Comment/Question: Finally, for such a simple task, why are university professors needed? What are they going to do?

Response: The Nez Perce Fisheries/Watershed Program is currently contracting with Washington State University (WSU) on watershed assessment work. As part of this collaboration, WSU has put together a technical advisory committee to provide oversight and technical assistance for other projects including road obliteration. This technical advisory committee will continue to exist in the future and will be expanded to include the Clearwater Subbasin Peer Review/Advisory Committee. WSU personnel presently include the Center for Environmental Education Director

(Darrin Saul, Ph.D.), professors from the Department of Civil and Environmental Engineering with expertise in hydrology (Thanos Papanicolaou, Ph.D. and Michael Barber, Ph.D., P.E., Rollin Hotchkiss, Ph.D., P.E.), and faculty from Biosystems Engineering (Shulin Chen, Ph.D., P.E.). Additional professors from University of Idaho will be involved in the project as well. The university professors are involved at an advisory level. These prefessors will review monitoring procedures, data processing and interpretation. Their role is to ensure that the project is scientifically effective, that monitoring justifies continued work in the watershed, and that the project conforms to overall program objectives as they develop as part of comprehensive planning in the subbasin. Additionally, university professors will review and provide input on the design proposals for the bank stabilization projects.

**Project: 9607709 Protect And Restore The Squaw To Papoose Creeks Watersheds**
Sponsor: Nez Perce Tribal Fisheries/Watershed Program

CBFWA tier: 1
ISRP review: Delay funding until the monitoring and evaluation plan is described in greater detail and a qualified fluvial geomorphologist is included on the project team. A comprehensive review of all habitat restoration activities in the Clearwater basin is needed.

ISRP Comment/Question: Delay funding until the monitoring and evaluation plan is described in greater detail and a qualified fluvial geomorphologist is included on the project team.

Response: The effectiveness and success of the project will be documented by two monitoring and evaluation (M&E) projects. The first M&E project focuses on road obliteration effectiveness. This project was initiated in 1998. The second M&E plan will address the issue of long-term fish population recovery and is currently under development. This plan will be coordinated with the umbrella monitoring and evaluation plan currently being developed by the NPT co-coordinator as part of the Clearwater Focus Watershed Program (part of FY99 activities).

The Road Obliteration Effectiveness Plan is implemented in cooperation with the Clearwater National Forest (CNF) and was initiated in 1998. This plan was developed as a guide for monitoring obliteration treatments. It involves monitoring and evaluating 5% of all road obliteration that has taken place in the Forest. One-fourth mile monitoring segments are established in a variety of areas with different characteristics, concentrating on the most difficult road obliteration sites. Information collected includes cross-sections, pebble counts, vegetative growth, erosion control blanket installation, photo points, mass failures, surface erosion, weir installation, slope stability, and mulch. The M&E process will occur for a minimum of two years and a maximum of five years or until it is determined that no additional significant changes will occur. This monitoring and evaluation will identify on-the-ground road obliteration techniques and practices needing refinement, locate any additional maintenance or follow-up work, and monitor sedimentation from obliterated roads. This plan will allow us to maximize the benefits of adaptive management and continue to improve overall road obliteration success.

The second monitoring and evaluation plan is currently in development and deals with long-term effects over time. The cleaning and flushing of excess sediment loads through streams and tributaries is a long-term process with many variables, and for this reason this will be a long-term program. The first step is to determine the limiting factors to be monitored for watershed and fisheries values. The impacts of sediment on habitat functions necessary for spawning and rearing life stages of healthy fish populations will be the focus of this plan. This project will include, at a minimum, monitoring sediment yield, cobble embeddedness, percent surface fines, percent fines by depth, turbidity/suspended sediment, pebble counts, and stream cross-sections. An extensive inventory will be made of mass failures and their causes throughout the analysis area after any large precipitation events. The data monitored will be evaluated for trends and possible conclusions on road obliteration and its overall impact upon fisheries habitat health.

The Clearwater National Forest collects much of the necessary monitoring data and has for many years. Our plan will incorporate this historical and contemporary data, and then fill the gaps necessary for a complete monitoring plan. For comparison, data is planned to be obtained from restored watersheds, heavily impacted watersheds, and relatively pristine watersheds. The data collected will be analyzed for trends and any conclusions that may be used to improve the road obliteration program.

Large episodic events lead to mass wasting from road related sources in steep forestland, such as the Squaw to Papoose Creek Watersheds Analysis Area. Consequently, the watershed must be subject to a significant triggering event before the success of restoration efforts can be adequately evaluated (Williams, 1997). Since no major events have occurred subsequent to road obliteration activities, it is too early to determine whether restoration has succeeded or failed.

Each of the monitoring plans will be adapted based on peer review from the Technical Advisory Group and to integrate with the umbrella monitoring evaluation plan being developed by the NPT co-coordinator during FY 1999.

The Nez Perce Tribal Fisheries/Watershed Program's road obliteration work (among other projects) is performed under a Challenge Cost-Share Agreement with the Clearwater National Forest (CNF). Through this agreement, the CNF and the Nez Perce Fisheries Program share technical support as needed. CNF support for this project includes their Road Obliteration Coordinator (Annie Connor-Civil Engineer), a Hydrologist (Jed Simon), and a Geomorphologist (Dave Middleton). Additionally, the Nez Perce Fisheries/Watershed Program currently is contracting with Washington State University (WSU) for watershed assessment work. As a part of this collaboration, WSU has put together a technical advisory committee to provide oversight and technical assistance for our other projects, including road obliteration. Personnel from WSU presently include the Center for Environmental Education Director (Darin Saul, Ph.D.), and professors from the Department Civil and Environmental engineering (Thanos Papanicolaou, Ph.D. and Michael Barber, Ph.D, Rollin Hotchkiss, Ph.D., P.E.), and faculty from Biological Systems Engineering (Shulin Chen, Ph.D. P.E.).

ISRP Comment/Question: A comprehensive review of all habitat restoration activities in the Clearwater basin is needed.

Response: A Clearwater Subbasin Peer Review Group/Technical Advisory Committee is being developed by the Clearwater Sub-basin Focus Watershed Program (led by the Nez Perce Tribe (NPT) and the Idaho Soil Conservation Commission (ISCC)). The Clearwater Sub-basin Focus Watershed Program will coordinate the activities of this committee. The cooperating agencies will include the Idaho Division of Environmental Quality, US Forest Service, Bureau of Land Management, Bureau of Indian Affairs, Nez Perce Tribal Fish Commission, Nez Perce Tribal Water Resources, Idaho Fish & Game, Washington State University (WSU), Idaho Department of Lands, Potlatch Corporation, Plum Creek Corporation, and private landowners. The responsibilities of this committee will include participating in prioritizing watersheds and restoration projects, discussing cost-sharing options, information dissemination, and technical review. The Clearwater Subbasin Peer Review Group/Technical Advisory Committee follows direction of the NPPC's Columbia River Basin Fish and Wildlife Program, Section 7.7A.1, Coordination of Watershed Activities. This committee is being developed as part of FY99 activities.

A comprehensive assessment of the Clearwater River Subbasin is currently underway and will be completed June 2000. The NPT and the ISCC are the lead agencies on the project. The Center for Environmental Education at Washington State University is the subcontractor responsible for conducting the Clearwater Subbasin Assessment. The Clearwater Subbasin Peer Review Group/Technical Advisory Committee will oversee and contribute in completing this effort as guided in Section 7.6C Coordinated Habitat Planning, Watershed Assessment, of the NPPC's Columbia River Basin Fish and Wildlife Program.

This project was initiated in the Clearwater Subbasin as part of the Early Action Watershed Program. The initial prioritization process was started with the completion of the Clearwater River Subbasin Salmon and Steelhead Production Plan in 1990. The plan included limited discussion of habitat problems, focusing largely on supplementation goals within the subbasin. Numerous watershed assessments (largely focused on 5$^{th}$ field USGS HUCs) have been completed in the Clearwater Subbasin since the 1990 plan. These have been used, where available, to refine the prioritization of activities within watersheds. The priority activities in the plan and more localized assessments were refined and prioritized during the next few years by the Nez Perce Tribe and the U.S. Forest Service. Projects were selected by NPT for implementation with funding made available through NWPPC Early Action Watershed Program. This project is clearly needed and has been identified through a multi-phase prioritization process that includes the only existing basin-wide plan, more recent assessments, and further refinement by staff in both the Forest Service and NPT.

ISRP Comment/Question: Other habitat mitigation measures, such as hillslope stabilization, addition of woody debris to channels, and stream bank revegetation have also been undertaken (although they are not mentioned in the project objectives or methods.

Response: Additional work (addition of woody debris to channels and stream bank re-vegetation) has taken place within the SPWAA, but is not the focus of this proposal. This proposal focuses on restoring upland slope stability and reducing chronic sediment sources by mass wasting and surface erosion. This reduction in sediment loads will work towards returning streams and tributaries to normal function and stability, therefore, protecting and enhancing restoration work already taken place within the analysis area and critical fisheries habitat. Our program approach is to begin addressing problems in the uplands before entering into in-stream restoration work.

ISRP Comment/Question: This is an expensive project (total cost 2000-2004 over $1.5M), and it is not possible to determine from the proposal how much of the work has already been accomplished.

Response: The road obliteration work in the Squaw to Papoose Creek Watersheds Analysis Area (SPWAA) is being performed under a Challenge Cost-Share Agreement between the Nez Perce Tribe (NPT) and the Clearwater National Forest (CNF). This agreement was created because of the importance of the analysis area as an anadromous fishery to both agencies and the watershed restoration needs identified. Under this agreement, both agencies fund and perform the road obliteration work cooperatively. A Watershed Analysis for the Areas from Squaw to Papoose Creeks, completed by both agencies, identified road obliteration as a necessity to reduce chronic sources of sedimentation from unstable, unneeded road prisms. Under this agreement the CNF agrees to fund contract administration and project inspection, provide road obliteration training, complete scheduled road rehabilitation and maintenance for system roads, complete road obliteration of selected roads, and provide planning, supervision, labor, and technical expertise for monitoring plans. The NPT agrees to provide; employees, planning, training, logistical support, onsite supervision, funds for contract equipment and erosion control materials, inspectors, and planning, supervision, labor, and technical expertise for monitoring plans. The Challenge Cost-Share Agreement allows more work to be done on the ground at a decreased cost by cooperatively funding and performing road obliteration. This agreement, in effect, leverages a minimum of 100% match in effort from the CNF for any BPA funds spent as part of this project. With this arrangement, watershed restoration work is accelerated to benefit fisheries spawning and rearing habitat, restoration work already accomplished, and current research projects within the analysis area (Salmon Supplementation Studies in Idaho).

Road obliteration in the Squaw to Papoose Creek Watersheds Analysis Area (SPWAA) began in 1997, when 10 miles of road were obliterated. In 1998 under the Challenge Cost-Share Agreement between NPT and CNF, 12 miles were obliterated in the analysis area by NPT. During the same year, an additional 26.4 miles of road were obliterated by CNF. A total of 48.4 miles of road within the SPWAA have been obliterated to date.

ISRP Comment/Question: The panel was concerned that despite initiation of the project in 1996, there are apparently no monitoring results.

Response: Since this comment repeats a similar concern of a previous comment, this response will repeat some information presented previously in this document. The effectiveness and success of the project will be documented by two monitoring and evaluation (M&E) projects. The first M&E project focuses on road obliteration effectiveness. This project was initiated in 1998. The second M&E plan will address the issue of long-term fish population's recovery and is currently under development. This plan will be coordinated with the umbrella monitoring and evaluation plan currently being developed by the NPT co-coordinator as part of the Clearwater Focus Watershed Program. In addition, immediate sediment delivery has been monitored in 1998 on an extremely sensitive road obliteration site on the West Fork of Squaw Creek. The Clearwater National Forest (CNF) also monitors and collects data on specific stream parameters as a part of their yearly-monitoring plan.

Measuring sediment delivered from road obliteration activities is a component of the Road Obliteration Program Effectiveness Monitoring Plan being conducted by the Nez Perce Fisheries/ Watershed Program and the CNF. This monitoring began in 1998 and will continue into 1999 and all future project years. This monitoring program focuses on direct sediment delivery to streams, surface erosion, possible effects of mulch on erosion, bank stability, erosion control blanket effectiveness, and re-vegetation. The results from the 1998 monitoring show that the activity of obliterating roads is generating very little sediment as a result of surface erosion (Preliminary monitoring

conclusions, 1998). Mitigation measures, including sediment fences and stream diversions, are controlling direct sedimentation, and mulch and erosion control blankets are working well in minimizing surface erosion and enabling quick and successful re-vegetation (Preliminary monitoring conclusions, 1998).

Between July 13 and July 28, 1998, an extremely sensitive obliteration location on the West Fork of Squaw Creek was monitored for sediment delivery to the stream. The monitoring location was approximately 1 mile in length and included 40-year-old rotting log cribbing that supported the road over the stream, several cross-drain channels, and a blown-out stream channel needing reconstruction. Sediment fences were installed in live tributaries to minimize sedimentation as much as possible. During the obliteration project, two automatic sediment samplers were installed to determine levels of suspended sediment and turbidity. One of these samplers was located upstream of the project site for control purposes and the other located immediately downstream of the road obliteration project to measure impacts on sedimentation. The monitoring showed a delivery of 0.2 cubic yards of sediment and no increase of turbidity over the 13-day period needed to obliterate this section of road. The project sponsor believes this to be a worst case scenario, in most cases, due to the extremely degraded condition of the road and its close proximity to the West Fork of Squaw Creek (fish bearing stream). In conclusion, the monitoring results have verified that road obliteration, when located in close proximity to streams, will deliver some sediment. The benefits of removing roads with high potential for mass wasting adding hundreds, if not thousands of cubic yards of sediment to streams is obvious. A very small increase of sediment in the short term is a small trade-off to prevent mass wasting in the future that can degrade streams and impact anadromous and resident fisheries.

The second monitoring and evaluation plan is currently in development and deals with long-term effects over time. The cleaning and flushing of excess sediment loads through streams and tributaries is a long-term process with many variables, and for this reason will be a long-term program. The first step is to determine the limiting factors to be monitored for watershed and fisheries values. The impacts of sediment on habitat functions necessary for spawning and rearing life stages of healthy fish populations will be the focus of this plan. This project will include, at a minimum, monitoring sediment yield, cobble embeddedness, percent surface fines, percent fines by depth, turbidity/suspended sediment, pebble counts, and stream cross-sections. The CNF has been collecting much of the necessary monitoring data since 1988. The plan will incorporate this historical and contemporary data, and fill the gaps necessary for a complete monitoring plan. The data already collected will be analyzed for trends and any conclusions that may be used to improve the road obliteration program. This M&E plan is scheduled for completion by the end of the 1999 year.

Each of the monitoring plans will be adapted based on peer review from the Clearwater Technical Advisory Group and to integrate with the umbrella monitoring evaluation plan being developed by the NPT co-coordinator during FY 1999.

References:

McClelland D.E., et. Al. 1997. Part 1: Landslide Assessment. USFS. Northern Region.

Northwest Power Planning Council. 1994. Columbia River Basin Fish and Wildlife Program. Portland, OR.

Williams J.E., Wood C.A., Domback M.P. 1997. Watershed Restoration: Principals and Practices. Bethesda, Maryland.

**Project: 9607711 Restore Mccomas Meadow/ Meadow Creek Watershed**
Sponsor: Nez Perce Tribal Fisheries/Watershed Program

CBFWA tier: 1
ISRP review: Delay funding until a connection to fish benefits is demonstrated and the monitoring and evaluation plan is strengthened. A comprehensive review of all habitat restoration activities in the Clearwater basin is needed.

ISRP Comment/Question: Delay funding until a connection to fish benefits is demonstrated and the monitoring and evaluation plan is strengthened. A comprehensive review of all habitat restoration activities in the Clearwater basin is needed.

Response: The habitat improvements proposed in this project support the goals and objectives of the Northwest Power Planning Council Fish and Wildlife Program. Specifically, section 7.6D, Habitat Objectives sets standards for sediment, bank stability, large woody debris, water quality, riparian vegetation, grazing, timber harvest, and many others. The Meadow Creek watershed does not meet minimum standards for sediment, bank stability, water quality, and riparian vegetation. Therefore, habitat improvement projects are essential to the recovery of anadromous fish within this watershed.

The monitoring and evaluation plan is being completed during FY 1999. A final draft of the plan will be completed before the beginning of FY 2000. This plan is being designed in cooperation with the University of Idaho, Department of Fish and Wildlife and the Nez Perce National Forest. This monitoring plan will include: temperatures, discharge, stage, visual appearance, channel profiles, sediment, bed material composition, fish densities, amphibian densities, riparian vegetation, wetlands, bank stability, pool: riffle ratios, and various water quality parameters.

A Clearwater Subbasin Peer Review Group/Advisory Committee is being developed by the Clearwater Subbasin Focus Watershed Program, which is comprised of the Nez Perce Tribe (NPT) and the Idaho Soil Conservation Commission (ISCC). The Clearwater Subbasin Focus Watershed Program will jointly coordinate this committee and is planning for the first meeting in September. The cooperating agencies tentatively include: Idaho Division of Environmental Quality, US Forest Service, Bureau of Land Management, Bureau of Indian Affairs, Nez Perce Tribe Fish Commission, Nez Perce Tribal Water Resources, Idaho Fish & Game, WSU, Idaho Department of Lands, Potlatch Corporation, Plum Creek Corporation, and private landowners. The responsibilities of this committee will include prioritizing watersheds and restoration projects, discussing cost sharing, performing information dissemination, and technical review. This Clearwater Subbasin Peer Review Group/Advisory Committee follows direction of the NPPC's Columbia River Basin Fish and Wildlife Program, Section 7.7A.1, Coordination of Watershed Activities.

A comprehensive review/watershed assessment of the Clearwater River Subbasin is currently underway and is targeted for completion in June 2000. The NPT and the ISCC are the lead agencies on the project, and Washington State University (WSU), Center for Environmental Education is the subcontractor for compiling data and technical and scientific review of the assessment. The Clearwater Subbasin Peer Review Group/Advisory Committee will oversee and contribute in completing this effort as guided in Section 7.6C Coordinated Habitat Planning, Watershed Assessment, of the NPPC's Columbia River Basin Fish and Wildlife Program.

This project was initiated as part of the Early Action Watershed Program in the Clearwater Subbasin. The initial prioritization process was started with the completion of the Clearwater River Subbasin Salmon and Steelhead Production Plan in 1990, and further prioritized by the Nez Perce Tribe and the U.S. Forest Service in the following years. This project was selected by the NPT, and funding was made available through the NPPC Early Action Watershed Program for implementation.

ISRP Comment/Question: Removal of irrigation ditches, riparian fencing and restoration of riparian vegetation are identified as the relevant response measures. However, the proposal doesn't describe the riparian zone or justify the need for plantings.

Response: Riparian vegetation within McComas Meadows currently consists of scattered alder and hawthorn species. Historical accounts of the area have indicated that the dense growth of willow along the edge of the creek made it difficult to access the water. Prior to 1993, the riparian corridor was grazed for 70 years by homesteaders' livestock. This intense grazing was an intolerable disturbance to the riparian zone resulting in the loss of riparian canopy. The willow populations have not regenerated in the riparian zone. The absence of the riparian canopy once dominated by willow has lead to unstable stream banks, increased sedimentation, and elevated water temperatures.

The absence of riparian vegetation within McComas Meadows, a 2.5 mile section of Meadow Creek, has resulted in a 10 degree Celsius increase. According to the Northwest Power Planning Council's Fish and Wildlife Program, under no circumstance should temperature ever exceed 68 degrees Fahrenheit (16 degrees Celsius). However, temperatures in the upper meadow were recorded at 17 degrees Celsius and 27 degrees Celsius in the lower meadow

during August! The lower 2-mile section of McComas Meadows has very little riparian vegetation. Plantings will decrease sedimentation by stabilizing the banks and lower water temperature by providing shade.

This proposal will re-establish native riparian vegetation. Studies will be conducted using historical photos, soil samples, and riparian surveys to determine the composition of historical native riparian vegetation and to determine the best planting strategy based on current conditions.

ISRP Comment/Question: What is the prognosis for natural regrowth of vegetation? Why won't that suffice?

Response: McComas Meadows has not been grazed since 1993. The 2.5 miles of stream (500 acres), of Meadow Creek has shown very little natural regrowth of vegetation, even after six years without grazing disturbance.

With the removal of grazing disturbance, natural regrowth should have begun and the riparian zone should be on its way to recovery. Ideally, natural succession, once disturbance is eliminated, would be sufficient to restore the area to health. But, this stream is a critical steelhead stream. The dramatic increase in water temperatures within the McComas Meadows is a priority limiting factor that must be addressed. Natural succession has not started yet, nor does the site show evidence that if left alone it will recover quickly. Because of this, plantings must begin as soon as possible to start the process of shading the creek. The plantings will focus on the species within the plant community most important for quickly establishing shade. Natural succession will continue in the area and ultimately determine future plant communities.

ISRP Comment/Question: Is a NEPA analysis really needed for a fence and some plantings?

Response: The NEPA analysis in this project will be completed before the irrigation canals that surround the meadow are obliterated. While under private ownership, a canal was built around the entire upper slope of the meadow for irrigation purposes. There are at least five major tributaries that enter the meadow, and pass through this canal. These canals are currently diverting water into the canal, which distorts the hydrologic function of these streams. In order to restore the hydrologic function of the streams, the irrigation canals must be removed. Plans to obliterate the canals cannot move forward without initiating the NEPA process to mitigate harmful environmental effects of the proposed action.

NEPA analysis must be completed before any wetland rehabilitation is completed. Historically, McComas Meadows supported wetland characteristics but after 70 years of grazing impacts, these characteristics have disappeared.

Before the exclusion fence was constructed around McComas Meadows in 1997, archaeological surveys were completed as part of the NEPA process. Findings from the surveys resulted in a categorical exclusion. The NEPA process that must accompany the proposed action for rehabilitation of the wetland may also result in a categorical exclusion.

ISRP Comment/Question: Why despite identification of high road density as a problem, is it that no measures are being undertaken to mitigate road effects?

Response: The work in this watershed is completed in a cooperative manner. The United States Forest Service (USFS) and the Nez Perce Tribe (NPT) work in this watershed under a Memorandum of Agreement. The work that each entity completes is spelled out prior to each field season so that no work is duplicated.

The USFS is completing surveys on the roads within this watershed during FY1999. The USFS is proposing road obliteration to begin in FY2000 within the Meadow Creek Watershed; therefore, the US Forest Service is undertaking measures to mitigate road effects within this watershed.

ISRP Comment/Question: In particular, what long-term data are being collected to document reductions in stream temperature that should result from the restoration efforts?

Response: Long-term temperature data will be taken at different points in Meadow Creek and in McComas Meadow to evaluate the impact of restoration activities on in-stream temperatures. Temperature data will be obtained using existing equipment established by the NPT and USFS. The NPT has installed Optic Stow Away automatic

temperature recorders at four locations within Meadow Creek. Two recorders are installed upstream of McComas Meadows, one in the middle of the meadow, and one below the meadow. The recorders are set to record temperature every hour. The USFS also has a HOBO automatic temperature recorder at the mouth of Meadow Creek.

In addition, the NPT, in coordination with the USFS and the University of Idaho, is currently developing an extensive monitoring plan. The parameters of the plan include: temperature, discharge, visual appearance (photopoints), width:depth ratios, bed material composition, cobble embeddedness, turbidity, channel profiles, bank stability, pool:riffle ratios, pool quality, redd counts, snorkel surveys, riparian vegetation, wetland surveys. The NPT and the USFS have pieces of data from 1992 to present, and the data is shared between the agencies.

ISRP Comment/Question: What is the sediment monitoring program?

Response: Sediment monitoring will consist of bed material particle size and turbidity measurements. Bed material particle size measurements are taken on an annual basis at three identified cross sections at upper, middle, and lower reaches within McComas Meadows. The Wolman pebble count method is used. Turbidity measurements will be taken with a HydroLab instrument. These measurements will be taken at the same time as the stream discharge measurements are taken, with more measurements concentrating at times of high flows. Amounts of suspended sediment are often based on a relationship between the concentration of suspended sediment and stream discharge.

In addition, the McComas Meadow/ Meadow Creek project conducts channel cross-sections and width-depth ratio measurements. Established and surveyed cross-sections will be used for these measurements. These measurements will be taken on an annual basis. Channel width-depth measurements are used to indicate changes in peak flows and sediment yield.

These activities will take place in the area impacted by reduced vegetation where stream temperatures are at an elevated level. Upstream, reconnaissance surveys will be done to identify the contributing factors leading to increased water temperatures downstream. These surveys will identify future work to complete the process of reducing temperatures into acceptable ranges in the watershed.

ISRP Comment/Question: The panel noted that the monitoring program is absent any emphasis on fish and associated biological conditions, which are supposed to be the primary focus of the program.

Response: Fish densities through snorkel surveys, as well as redd counts, and amphibian densities are measured through the BPA project 8335003, which is managed by the Nez Perce Tribe Fisheries Research Department. The two projects, as well as the US Forest Service, work cooperatively on monitoring and evaluation efforts.

The McComas Meadows/Meadow Creek project incorporates collection and analysis of macroinvertebrates as an indicator of biological condition. Macroinvertebrates will be collected using a modified Hess sampler. Samples will be taken three times each year (seasonally). The samples will then be sent to a lab for identification and analysis.

ISRP Comment/Question: Finally, the project cost seems excessive with respect to what is intended to be accomplished for the fish and their stream.

Response: Over three miles of stream and over 500 acres of riparian/meadow habitat have been protected from cattle grazing thus far. The funding requested will allow rehabilitation to continue in these protected areas. Since this project coordinates with several long-term projects already underway, it includes components of previous project monitoring, evaluation, and analysis. The results from this monitoring will give direction as to where restoration efforts should be focused in the next few years. Monitoring is an expensive task, if it is to be completed correctly.

The USFS is completing a Watershed Analysis during FY 1999. The leader for this project is a core team member in this process. This analysis will provide a historical background and provide a prioritization for problem areas within the watershed. In addition, the USFS has identified Meadow Creek as a site for pursuing restoration projects as part of the Forest “Proposal for Stewardship End Result Contracting.” A variety of treatment options are being evaluated for this proposal, including, but not limited to road decommissioning and relocation, in-stream and riparian restoration, noxious weed treatments, creating additional dispersed campsites, train maintenance and improvements, commercial timber harvest to repattern vegetation, produce early seral habitat and restore ponderosa, tree pruning

and precommercial thinning, and mine site stabilization. The Nez Perce Tribe is pursuing this stewardship contract, as it would enhance and benefit this project giving an opportunity for cost sharing between BPA and the USFS.

ISRP Comment/Question: The university role seems inconsistent with the practical goals of the project; why are university professors needed to install fences?

Response: The project leader for 9607711 is currently working toward a master's degree in Fisheries Resources at the University of Idaho. This project is the focus of her thesis. The thesis involves conducting an intensive study of passive vs. active restoration approaches. The thesis will also give recommendations for restoration activities that should occur within this watershed. The university professors will serve as the advisory committee for the project, particularly the monitoring component of McComas Meadows.

**Project: 9608600 Clearwater Subbasin Focus Watershed Program - ISCC**
Sponsor: Idaho Soil Conservation Commission

CBFWA tier: 1
ISRP review: Delay funding until they demonstrate relation to fish and wildlife and include a clear statement of overall objectives of this project, the relationship of project objectives to overall basin restoration objectives, as well as timelines, and a rationale (prioritization via a watershed assessment) indicating why specific elements are being undertaken, and in what order. A comprehensive review, via a visiting committee, of all habitat restoration projects within the Clearwater basin is needed.

ISRP Comment/Question: Delay funding until they demonstrate relation to fish and wildlife and include a clear statement of overall objectives of this project, the relationship of project objectives to overall basin restoration objectives, as well as timelines, and a rationale (prioritization via a watershed assessment) indicating why specific elements are being undertaken, and in what order.

Response: To protect and improve habitat conditions to ensure compatibility with the biological needs of salmon, steelhead, and other fish and wildlife species, the Northwest Power Planning Council has adopted the following as a program habitat goal: "Ensure human activities affecting production of salmon and steelhead in each subbasin are coordinated on a comprehensive watershed management basis." (Columbia River Basin Fish and Wildlife Program, Section 7.7, p 7-39) This methodology is a way of doing business that emphasizes the organization of goals and objectives of all interests in order to maximize available natural, human, and fiscal resources. Model watershed programs were begun to implement this goal.

The Clearwater River was designated as a focus subbasin in Idaho State to apply the approaches developed in the model watersheds as provided by Section 7.7A.4 of the Columbia River Basin Fish and Wildlife Program. As a result of early scoping meetings it was determined that the focus program in the subbasin should be co-coordinated by Idaho State and the Nez Perce Tribe. The governor selected the Idaho Soil Conservation Commission to be the lead entity to support local subbasin efforts to coordinate watershed activities for the state; the Nez Perce Tribe selected the Tribal Fisheries Department.

The Clearwater Focus Program began mid Fiscal Year 1997 with the following goal: Coordinate multiple jurisdictions, agencies, and private landowners to protect, restore, and enhance fisheries habitat to increase juvenile and adult survival of salmon and steelhead at each freshwater life stage.

Human activities that affect the production of salmon and steelhead in the Clearwater River subbasin are related to predominate land uses, they are, agriculture, logging, mining, and grazing. Nonpoint source pollution generated by these landuses has resulted in varying degrees of freshwater rearing and spawning habitat degradation throughout the subbasin. The most common factors limiting habitat quality are sediment, temperature, and habitat alteration.

ISRP Comment/Question: Coordination projects can have positive results, but there is a danger of the work becoming fragmented and including activities not directly related to restoration goals. Success depends, in large part, on the willingness of leaders to "take the lead," in coordinating personnel. For that reason, such proposals should include an outline of the specific types of actions guiding efforts in each basin.

Response: When the Clearwater Focus Program was initiated, work began on the critical elements outlined in Section 7.7B.2 of the FWP. It immediately became clear that because of the large size of the subbasin (9,645 square miles) and the tremendous amount of data, albeit unevenly distributed throughout, a comprehensive subbasin-wide assessment was going to require a significant investment in time and resources. It was also clear that projects existed that had been curtailed due to funding or staffing reductions and others had been identified in the 1990 Clearwater River Subbasin Salmon and Steelhead Production Plan (Nez Perce Tribe and Idaho Department of Fish and Game) but not implemented. The U.S. Natural Resources Conservation Commission Watershed Enhancement Team for Idaho Division II had also identified projects in the subbasin that focused on anadromous fish priorities.

All of these projects fit project criteria for potential BPA funding and had technical advisory assistance from subbasin state, federal, and tribal staff. The Focus Program co-coordinators determined that from a watershed perspective it was most reasonable to complete existing projects and/or plans while pursuing a large scale subbasin-wide assessment from which further prioritization of subwatersheds could be made. Proposals were developed for BPA funding consideration for those watershed projects that were important for salmon and/or steelhead rearing and spawning, and had multiple funding and technical assistance partnerships. In all cases proposals were developed for attenuation of nonpoint pollution generated from upland landuses. Projects funded for Fiscal Year 1999 in the western subbasin begin work on private lands as provided by Section 7.7 FWP. BPA funding has consequently been leveraged with U.S. Forest Service (NPT project development), U.S. Natural Resources Conservation Service, U.S. Farm Service Agency, Idaho State Agricultural Water Quality Program, and private landowners.

The ISCC Fiscal Year 2000 proposal reflects the present status of the Clearwater Focus Program with objectives reflecting the above. For example, objective 3 in the Fiscal Year 2000 proposal is specific to coordinating completion of the Potlatch River Basin assessment. The Potlatch River is a 277,000-acre subwatershed of the mainstem Clearwater River. The project was started by the NRCS Watershed Enhancement Team but discontinued when the team was disbanded. Significant interagency funds and staff time have been expended on the project which targeted steelhead rearing and spawning habitat conditions and fish distribution. Much of the watershed analysis is complete, what remains to be done includes assisting the Latah Soil and Water Conservation District and Natural Resources Conservation Service with document preparation, reconvening of the technical advisory group, peer and public review.

Focus Program projects started in Fiscal Year 1999, located in the western subbasin, are in subwatersheds that are not affected by those that headwater in the Bitterroot Mountains. Projects located in the eastern subbasin are in subwatersheds of the upper Clearwater subbasin (Bitterroot Mountains) and will not be negatively affected by any upland land use. The nature of these projects has lent itself to the co-coordinators taking project lead depending on the dominant land status and general location within the subbasin. Finally, the proposal reflects the Focus Program interface with other subbasin level actions, the Clean Water Act TMDL process and the Bull Trout assessment project.

As for providing “an outline of the specific types of actions guiding efforts in each basin.” Evolving from the phase of action described above, a subbasin-wide assessment is scheduled for completion in Fiscal Year 2000 and will function as an update of the 1990 Subbasin Production Plan as provided in Section 7.0C.1 FWP. Professional staff from agencies and organizations within the subbasin and the University of Idaho and Washington State University will conduct a technical peer review. A public review will also be conducted. This process, in conjunction with policy guidance from the Clearwater Policy Advisory Committee which is presently being formed, will identify priorities for fisheries habitat restoration. This work will provide the basis for the second phase of the Clearwater Focus Program where the next cycle of projects are developed for funding consideration by various sources. Technical advisory teams will be formed for these projects to reflect subwatershed management responsibility and land ownership. Project technical advisory groups will be subsets of the technical peer review team established for the subbasin-wide assessment. The Policy Advisory Committee will convene biannually or quarterly after formation.

Programmatic timelines have been discussed and revolve around completion of the subbasin assessment. Current on-the-ground upland treatments (Projects 9901400 and 9901500) are planned through Fiscal Year 2003. The Cottonwood Creek (Idaho County) watershed assessment is in review and project development could be completed in time for the Fiscal Year 2001 cycle. Watershed restoration project development for the Potlatch River will be in place for the Fiscal Year 2002 funding cycle.

ISRP Comment/Question: The project needs a focus on increased flows that more closely approximate natural seasonal hydrographs. Many problems with salmon streams can be resolved with restoration of adequate discharge.

Response: Altered flow regimes in the Clearwater River subbasin are related to changes in land cover and resultant water retention in the upper portions of watersheds. Watersheds that are tributaries to the mainstem Clearwater River for example, are characterized by plateau breaklands marking a distinct change in topography that contribute to canyon and ravine formation and steep stream gradients. Many of these watersheds that were previously forested are now agricultural and seasonal hydrographs have consequently been altered. Projects are developed to implement upland measures to initiate recovery of the watersheds to systems exhibiting less extreme seasonal flow variations. Water diversions for irrigation are minimal in the subbasin and do not contribute to habitat degradation. The most notable impediment to flows within the North Fork Clearwater and mainstem is Dworshak Dam. The Lewiston Dam once located near the confluence of the Clearwater and Snake Rivers and Harpster Dam, which blocked the entire South Fork Clearwater River, were removed approximately 30 years ago.

ISRP Comment/Question: Little information is provided in the proposal as to how the funds will be used – the methods section consists primarily of a "toolkit" of restoration approaches.

Response: The requested funding is primarily administrative that will provide for the co-coordinator position and the support necessary for public meetings, workshops, and publishing needed for participation with the subbasin assessment, philosophical framework, technical reviews, and Policy Advisory Committee. A line item for acquisition of monitoring equipment will augment acquisitions made during Fiscal Year 1999. Field personnel from other agencies as well as the co-coordinator use the equipment to monitor BPA projects and to collect background data from areas of concern.

ISRP Comment/Question: Furthermore, the project history section is thin. No real results to date are listed

Response: If "real results" are measurable habitat factors, then this comment is accurate because the nature of the co-coordination functions and the expected products from that work are not the same. It would seem that what is "real" would be debatable, in any other case given the accomplishments attained in 18 months.

For additional information about co-coordination and the Clearwater Focus Program, please see the Nez Perce co-coordinator response for project #9706000.

**Project: 9608701 Focus Watershed Coordination-Flathead River Watershed**
Sponsor: Confederated Salish and Kootenai Tribes

CBFWA tier: 1
ISRP review: Fund for one year, with contingency. Subsequent funding contingent on inclusion in an umbrella, definition of importance of the interface between research, mitigation, and public acceptance, and more specificity of the work and results. Include in comprehensive independent science review of all Flathead proposals.

ISRP Comment/Question: Fund for one year, with contingency. Subsequent funding contingent on inclusion in an umbrella, definition of importance of the interface between research, mitigation, and public acceptance, and more specificity of the work and results. Include in comprehensive independent science review of all Flathead proposals.

Response: This proposal should be associated with the other projects listed under the Hungry Horse Fisheries Mitigation umbrella. However, BPA instructed the sponsors not to include this program under an umbrella because the umbrella for watershed projects is BPA's Watershed EIS. This project can be included under the Hungry Horse Fisheries umbrella in the future if there is still doubt as to whether or not the EIS should be the umbrella document.

ISRP Comment/Question: This is a public-contact project that does not fit the ISRP's proposal evaluation criteria well. Much is quite vague. The work seems reasonable and is probably very important (from a sociological perspective). The proposal cites relevant FWP measures, ESA listings, and 13 other planning documents for the Flathead basin. It also cites 5 Flathead projects as related, which is good.

Response: This program does not fit the evaluation criteria well. This project is a coordination/ public outreach project and many of the ISRP's criteria are scientifically based. It is often hard to quantify coordination. Success can be quantified by the amount of landowner cooperation achieved or possibly by the number of agencies and groups working together toward common goals. The success of associated restoration activities is monitored by the associated BPA funded Flathead projects. Monitoring is also done cooperatively by other agencies such as CSKT, MFWP, BOR, University of Montana, etc.

ISRP Comment/Question: This is a continuing project (initiated 1997), and it should be reviewed in the same manner as is recommended for projects submitted under the above-mentioned umbrella – specifically, by a visiting committee, subsequent to which a longer-term (e.g. 3-5 year) proposal should be submitted.

Response: A review by the ISRP would be welcome.

ISRP Comment/Question: There are listing of objectives and tasks, oriented toward coordination, information transfer, and organizing landowners, but the discussion is rambling with no measurable objectives. The objectives narrative is not well focused and is more a discussion of accomplishments and justification. The Methods section contains no concrete information. Statements such as, “We will incorporate the principles of consensus, collaborative effort, and interagency cooperation” make for nice rhetoric but convey no useful information regarding methods. The proposal failed to address the ISRP’s FY99 comments, Appendix A, page 70. Although probably important, it is hard to justify funding from the proposal.

Response: The method for achieving watershed coordination is through consensus, collaboration, and cooperation. Although this may sound like "rhetoric" to the ISRP, it is the only efficient and effective means of achieving success within the Flathead Basin. Effective watershed scale restoration takes time and cooperation.

This program fosters “grass roots” public involvement to achieve the goal of habitat restoration. The principles of consensus, collaborative effort, and interagency cooperation are all incorporated in this project. Public scoping will be conducted by approaching existing public groups and private landowners to assess their needs and soliciting cooperation. One-on-one interviews will be used to obtain candid insights. Given the unique stakeholders and personal dynamics of each subbasin within the Flathead drainage, it seems unlikely that a single uniform approach to establishing local watershed groups is going to be successful. Local watershed plans are going to have to be dynamic to meet the needs of local communities and promote the persistence of target fish and wildlife species. The Model Watershed Plan for the Lemhi, Pahsimeroi and East Fork of the Salmon River (Idaho Soil Conservation Commission 1995) and the Grande Ronde will be used as templates for process but it is expected that significant deviation will occur according to differing resource needs of the Flathead drainage.

ISRP Comment/Question: Accomplishments are mostly in planning (soft) and some on-the-ground work in 1998. Although this project is ongoing, the Project history section contains no solid information regarding past accomplishments. There is cost share with BOR and on-the-ground support from 4 other groups. The background is ok, but relies on references (e.g., last year’s proposal) that will not be read in judging this proposal. The rationale relates the work to other BPA projects (again, why not part of the umbrella?), conservation districts, and public organizations

Response: It is difficult to provide a lot of detail and remain within the requested page limit. This program provided cost share to several on-the ground efforts in its first two years. This project provided cost share toward watershed restoration in the east fork of the Valley Creek drainage. Improvements include riparian fencing, a headwater wetland livestock exclusion fence, stockwater development, and relocation of a stream side road. Although BPA funds were not directly used for all of the above mentioned activities, the watershed coordinator helped facilitate the payment and cost sharing of all activities accomplished thus far and in the future. More riparian fencing, grazing management, and stockwater development is proposed for summer/fall 1999.

This project also contributed cost share and technical assistance to the Valley View area. Improvements include riparian fencing and livestock water development to remove cattle from tailwater drainages contributing sediment directly to the Flathead River. Other activities include the development of a wildlife pond.

In the Dayton drainage, much time has been spent identifying problems and solutions. Projects proposed include rehabilitation of a creek-spanning corral system, channel reconstruction, revegetation, stockwater development, irrigation improvement, culvert replacement, and riparian fencing. Some on-the-ground work is proposed for summer of 1999. The watershed coordinator in conjunction with Lake County Land Services, DEQ, USFWS, Trout Unlimited, MFWP, Plum Creek, BOR, CSKT, and private landowners is currently seeking funding.

The watershed program has helped in funding and facilitating a pilot project in the Little Bitterroot drainage. This pilot project will help facilitate a watershed scale restoration in the Little Bitterroot drainage.

Landowners have been contacted and are assisting in identifying problems within the DuCharme/Moss/Centipede Creek drainages. To date, this project has assisted in cost sharing a livestock exclusion fence along DuCharme Creek adjacent to Flathead Lake.

This program is assisting in facilitating on-the-ground work in both the Marsh and Post Creek drainages. To date, a small section of channel reconstruction has occurred within Post Creek. This fall, channel reconstruction in conjunction with riparian fencing, revegetation, and livestock water development is proposed for both Marsh and Post Creek.

**Project: 9608720 Focus Watershed Coordination-Kootenai River Watershed**
Sponsor: Montana Fish, Wildlife and Parks and the Confederated Salish and Kootenai Tribes

CBFWA tier: 1
ISRP review: Fund for one year. Subsequent funding contingent on inclusion in an umbrella; definition of importance of the interface between research, mitigation, and public acceptance; and more specificity of the work and results. Include in comprehensive independent science review of the Kootenai projects.

ISRP Comments/Question: Fund for one year. Subsequent funding contingent on inclusion in an umbrella; definition of importance of the interface between research, mitigation, and public acceptance; and more specificity of the work and results. Include in comprehensive independent science review of the Kootenai projects.

Response: Most of the ISRP comments were favorable. The proposal did not clearly articulate its relation to the overall umbrella project.

ISRP Comments/Question: It [the proposal] is not included in the Kootenai umbrella, which is especially puzzling for a coordination project.

Response: The project sponsors were specifically told not to include this project in the Kootenai umbrella by their BPA COTR, Ron Morinaka. However, the project is, in practice, an important component of the overall umbrella project and will be included in it, on paper, if instructed to do so.

ISRP Comments/Question: Given that the stated coordination and integration are actually represented in the subbasin umbrella, this project could be a good candidate for multi-year funding.

Response: The coordination performed by this project is necessary for successfully completing all mitigation progress included in the Kootenai umbrella.

ISRP Comments/Question: The reviewers noted some sticky issues that the Focus Group will have to address: The key is to get this group to accept that rainbow trout (redband) and kokanee salmon are probably exotics, at least according to Robert Behnke (1992). They should not be above the great falls of the Upper Columbia. Hybridization by rainbow with westslope cutthroat trout is a serious threat to the native cutthroat.

Response: The findings of Behnke (1992) has been subsequently amended by genetic research (e.g., Huston 1995; Allendorf et al. 1980), it is now credibly accepted that the historic range and current distribution of redband extend as far inland as the Kootenai River (spelled Kootenay in Canada). The gerrard strain (kamloops) native to Kootenay Lake are a large adfluvial stock, genetically indistinguishable (at present) from the Columbia and Fraser River

redband (*Oncorhynchus mykiss gairdneri*). Although kokanee are exotic in Libby Reservoir and Kootenai River downstream, the species is native to the lower Kootenay River and Kootenay Lake in British Columbia (Jay Hammond, B.C. Ministry of Environment). Hybridization between rainbow and cutthroat is indeed a threat to both westslope cutthroat and redband rainbow. However, several tributaries in the Yaak River in Montana contain both species that have apparently co-existed with no hybridization. Apparently, when humans have not tampered with the fishery community, the fish segregate temporally and physically in their respective spawning areas (Joe Huston and Robb Leary, personal communication). It is also apparent that, where hatchery fish have been introduced, this segregation breaks down and hybridization occurs. The genetically pure population in Callahan Creek, Montana, is apparently protected by passage difficulty over two falls/cataracts in the lower reach of this Kootenai River tributary. The project sponsor has repelled to the site and believes that the fusiform shape of the redband allows two-way passage through the affected stream reach.

ISRP Comments/Question: Proposers have done a good job in identifying the importance of the transboundary aspects of the population structure of bull trout (Wigwam Creek) and burbot, although the term metapopulation is used too loosely.

Response: There are spawning runs of bull trout in at least five tributaries to the Kootenay River upstream of Libby Reservoir, although their numbers have only been documented in one of the five. The project sponsor awaits further clarification.

ISRP Comments/Question: It is not clear that trade-off protocols were used to make decisions concerning which tactic [referring to active or passive stream restoration strategies] to employ. As active restoration has had a checkered reputation, what criteria were used to determine the choice of active over passive restoration?

Response: This proposal is for coordination only and the actual on-the-ground improvements have been carried out by the other Kootenai umbrella projects. This concern was addressed in the responses to projects 8346700 and 20517. The “checkered reputation” of most historic active restoration techniques was well deserved. However, new active restoration techniques may be suffering from guilt by association. Passive techniques are used were possible and resort to active restoration techniques where recovery time is of the essence. Several of the streams being restored were actively damaged (channelized ostensibly to improve drainage for flood control, road building etc). Unfortunately, the new channel type does not have the energy to move bedload and the streams have filled with sediment. In one project stream, Parmenter Creek, the materials formed a lens of material higher than the surrounding landscape and even small runoff events caused flooding of homes. In a large watershed, Libby Creek, lateral stream migration caused by human disturbance has resulted in mass wasting and excessive bedload accumulation that is causing the important spawning stream to flow below ground during the fall spawning run (completely blocking fish migrations). Passive restoration techniques would take hundreds of years to repair the results of past active management. If streams flow subsurface for more than approximately six years, the existing bull trout run will be destroyed. If flooding occurs in all but the lowest water years, homes will be destroyed. Clearly, passive restoration techniques cannot be used in these situations. Many criteria are used to determine what methods should be used at different sites. The so-called “active” restoration techniques (e.g., Rosgen Methodologies) employ more passive techniques, of which the reviewers might not be aware. Rosgen is attempting to correct past errors and provide improved strategies for restoring streams. If the ISRP has developed other criteria for selecting active or passive strategies, the project sponsors would very much appreciate having them.

ISRP Comments/Question: The project should be included in an in-depth peer review of all projects in the Kootenai subbasin. This project is on a good track and it should benefit from such a review.

Response: The project sponsors are anxious for a project specific review to discuss this project in greater depth.

**Project: 9700100 Captive Rearing Initiative for Salmon River Chinook Salmon**
Sponsor: Idaho Department of Fish and Game

CBFWA tier: 1
ISRP review: Fund in part, at a base level, to meet production objectives; do not fund research component of proposal because of technical inadequacies. There should be quality research associated with this project, designed

with suitable methods and testable hypotheses to address recognized uncertainties associated with captive brood technology.

ISRP Comment/Question: Fund in part, at a base level, to meet production objectives; do not fund research component of proposal because of technical inadequacies. There should be quality research associated with this project, designed with suitable methods and testable hypotheses to address recognized uncertainties associated with captive brood technology.

Response: The project sponsor disagrees with the ISRP comment to not fund the research component of the proposal. This technique development and demonstration project requires an active monitoring and evaluation component. It is not sufficient to solely focus on production. All monitoring and evaluation (research) activities are coordinated through a multi-agency technical oversight committee (TOC) to ensure relevancy to program objectives. Many agency representatives serving on the TOC are recognized experts in the field of captive brood stock research. No measure of program success is available without the research component of the program.

ISRP Comment/Question: The proposal appears to have as its basic assumption that captive reared fish are the same ecologically, behaviorally, and genetically as the native stock; however, this assumption should be tested as the project's major null hypothesis, rather than serving as its primary assumption.

Response: It is not assumed that two stocks of fish are the same. One purpose of the project is to develop culture techniques to rear fish in captivity so they are similar to their wild counterparts. This is clearly stated as the first objective and hypothesis in the proposal.

ISRP Comment/Question: Captive rearing may be a reasonable (but last-ditch) effort in the current situation; reviewers assume that policy has been formally reviewed and approved in the region.

Response: No policy has been set in the region. The purpose of this project is to develop and test one form of captive propagation – captive rearing – to be used as a conservation tool. Information produced by this project will be delivered to policy level managers to use when addressing the questions about if, when, and where captive propagation should be used as a conservation tool.

ISRP Comment/Question: Progress on the project in 1997-98 is only superficially described, but it appears that results from captive-reared fish that were released in 1998 will be very important.

Response: This is correct. Insufficient space was available in the proposal form to provide a detailed description. Having just completed collecting data from the first out plant of mature male and female fish, the proposal was also written at the time. Data analysis was not complete at the time the proposal was due. A project progress report detailing all activities to date was subsequently submitted to and is available from BPA.

ISRP Comment/Question: The proposal's stated objectives seem reasonable at first glance, but the tasks described in the methods section will not meet the objectives, so the proposal is unsound from scientific standpoints.

Response: Because of the multi-agency coordination of the project through the TOC and the scientific experts serving on the TOC, the project sponsor feels confident that our methods (tasks) support the objectives.

ISRP Comment/Question: The proposal indicates (p. 16, end of first paragraph under Obj. 2) that "a framework" is still being developed for the FY2000 methods.

Response: At the time the proposal was submitted this was correct. Determination of numbers and sex of fish available for out planting and coordination of all activities with co-managers takes place seven to eight months after the proposal was submitted. It would have been premature to detail methods in the proposal. Extensive inter-agency coordination occurs through this project. A NEPA environmental assessment is being completed for this project. The methods are justified, the work is critically important, and the project should be funded.

**Project: 9700300 Box Canyon Watershed Project**
Sponsor: Kalispel Tribe of Indians - Kalispel Natural Resource Department

CBFWA tier: 3
ISRP review: Fund for one year (medium priority). Subsequent funding contingent on a better description of the watershed plan and monitoring methods.

ISRP Comments/Question: Fund for one year (medium priority). Subsequent funding contingent on a better description of the watershed plan and monitoring methods.

Response: This proposal has been withdrawn for FY 2000 by the project sponsor.

**Project: 9700900 Evaluate Rebuilding The White Sturgeon Population In The Lower Snake Basin**
Sponsor: Nez Perce Tribal Fisheries/Watershed Program

CBFWA tier: 1
ISRP review: Fund in part at reduced level, subsequent funding contingent on submission of a more coherent and scientifically defensible proposal.

ISRP Comments/Question: Fund in part at reduced level, subsequent funding contingent on submission of a more coherent and scientifically defensible proposal.

Response: ISRP recommends funding in part at reduced level; however, no information regarding what portion should not be funded is provided. The CBFWA resident fish caucus recommended a reduction of $10,000 due to an overlap in project tasks with project 9902200 (Assessing Genetic Variation Among Columbia Basin White Sturgeon Populations).

ISRP Comments/Question: Subsequent funding contingent on submission of a more coherent and scientifically defensible proposal. This is a proposal for the fourth year of an ongoing project "… to restore rebuild the white sturgeon populations in the [Lower Snake River]". Apparently this is proposed base program funding, rather than any specific project. The major problem being addressed appears to be lack of current information on sturgeon stocks.

Response: Proposals are submitted based on the tasks set out in the Multi-Year Study Plan (Hoefs 1997) which has been accepted by BPA. The multi-year plan was developed to address the critical uncertainties identified under the Biological Risk Assessment Team (BRAT; Carmichael et al. 1997). The BRAT was a highly coordinated research effort that was consistent with the White Sturgeon Program Plan adopted by the NPPC in 1995. The BRAT concluded that data to fully assess these hypotheses, or critical assumptions concerning the Snake River white sturgeon population between Hells Canyon and Lower Granite dams, is not available (Carmaichal et al. 1997). This proposal is not for base program funding; rather, it is for a specific multi-year research project. Section 4 of the proposal details the project's objective schedule.

ISRP Comments/Question: $400K has been apparently spent to develop a study plan, but no data have as yet been gathered.

Response: Population abundance data have been collected since 1997 using a mark-recapture study in 129 km of the Snake River (5 reaches) and 185 km of the Salmon River (four reaches). White sturgeon spawning habitat and movement data have been collected since 1999 through radio tracking of seven fish (three adults and four juveniles) with 20 fish to be tagged within the next year. This task was to end in 2001, but funding was delayed in 1998, resulting in a delay of the initiation of this task. Therefore, the task will be continued through 2002. Eggmats were deployed in 1999 as part of task 1.3, resulting in the recovery of four eggs.

ISRP Comments/Question: There is no clear evidence of collaboration with other researchers except for an agreement to share data; it's unfortunate that *there* more active cooperation with IPCO is not proposed.

Response: This research was organized under the BPA project number 860500 in the past, but was separated for ease of contracting. The project sponsors attended the Columbia Basin White Sturgeon Genetic meeting (hosted by University of Idaho) in Boise (January 14, 1999) and the White Sturgeon Technical Advisory Committee meeting (hosted by Idaho Power Company) in Boise (June 2, 1999). The project sponsors have taken genetic samples for the University of Idaho (Paul Anders), and additionally, have coordinated with US Geologic Survey (Mike Parsley) and relied on their expertise to deploy and recover sturgeon egg mats throughout our study area. The sponsors have spoken with Washington Department of Fish and Wildlife (John Devore) about young-of-the-year white sturgeon collection techniques. A meeting is set (July 19-20, 1999) with Oregon Department of Fish and Wildlife (Tom Rein) to prepare and age white sturgeon fin rays. A Memorandum of Agreement with Idaho Department of Fish and Game (Larry Barrett) is being prepared to share data. The current collection of data has been coordinated with IPCO to reduce the duplication of effort where the two study areas overlap.

ISRP Comments/Question: There is little information about what, specifically, has been accomplished with prior years' funding.

Response: The BRAT report was completed and the multi-year study plan was developed. These reports developed white sturgeon sampling techniques that are reliable throughout the study area. The 1997 annual report addresses this.

ISRP Comments/Question: The study objectives (e.g., "assess the current status …" and "provide the basis to evaluate …") are vague. It is not at clear how the "Proposal Objectives" relate to the Fish and Wildlife Program Objectives.

Response: These objectives originate from the "White Sturgeon Research Program Implementation Plan," not our project proposal, and were developed by the BPA and approved by the NPPC in 1985.

*Objective 1) Evaluate the need and identify potential actions for protecting and restoring populations to mitigate for effects of hydropower on white sturgeon productivity.*

The proposer's objective 1 is related to the section 10.1 Resident Fish Goal: Recover and preserve health of native resident fish injured by hydropower system and 10.1A Mitigation objectives, rebuilding schedules, survival targets, and performance standards. "...the Council calls for the identification of resident fish mitigation objectives and, to the extent appropriate, associated rebuilding schedules, survival targets, and performance standards."

*Objective 2) Determine the status and characteristics (reproductive and early life history) of the Snake River white sturgeon population between Hells Canyon and Lower Granite Dams, including the major tributaries (Clearwater and Salmon rivers).*

*Objective 3) Determine habitat used for spawning and rearing of white sturgeon in the Snake River between Lower Granite and Hells Canyon Dams, including major tributaries (Clearwater and Salmon rivers).*

Objectives 2 and 3 are the starting points from which to address the needs of the species, and both objectives are related to section 10.4 Sturgeon mitigation "...studies and evaluations should be undertaken and completed quickly, and on-the-ground projects identified and implemented as soon as possible to address the needs of the species."

*Objective 4) Develop an adaptive management plan.*

Objective 4 is related to section 10.2D Project Implementation and Selection. "Each proposed project should address and include adaptive management principles by defining the anticipated result in terms of a hypothesis to be tested (in quantitative terms if possible) and appropriate monitoring and evaluation to determine whether and why those results have been achieved."

*5) Restore population to provide an annual sustainable harvest of 5 kg/ha/yr.*

Objective 5 is related to section 10.1A Mitigation objectives, rebuilding schedules, survival targets, and performance standards. "...the Council calls for the identification of resident fish mitigation objectives and, to the extent appropriate, associated rebuilding schedules, survival targets, and performance standards."

ISRP Comments/Question: The publication plan is inadequate; after three years, and expenditure of over a million dollars, the project has produced no peer-reviewed publications.

Response: It is too early to produce any peer-reviewed publications. The project sponsor has produced the Biological Risk Assessment Team Report, The Multi-Year Study Plan, and the 1997 annual report, and is in the process of writing the 1998 annual report. They are still collecting data for the population abundance estimates, which began in 1997. Population structure and habitat utilization data are to be collected through 2001.

ISRP Comments/Question: No one is identified to conduct the computer simulation that will be necessary to answer the questions posed in the proposal.

Response: "Capture" has been identified as a potential computer program to estimate abundance. A variety of survival programs are available to run simulations about the sustainable-yield proposed in the project.

ISRP Comments/Question: The panel was especially concerned about the large expenditures to date and the apparent lack of progress towards the study objectives.

Response: The BRAT was completed and identified certain critical uncertainties, which were addressed in the multi-year study plan. This plan clearly spells out the objective schedules from 1995 through 2003. All objectives that were to be completed to date have been accomplished.

ISRP Comments/Question: This project would benefit from an overall project review, which can't be accomplished effectively given information presented here. The Council should set a termination date for this project ('outyear cost" section of the budget suggests that it will continue indefinitely), and should require that a multi-year proposal be submitted.

Response: The termination date for the project has been set in the multi-year study plan as 2003 and yearly proposals are submitted based on the task scheduling laid out in the multi-year study plan.

**Project: 9701100 Enhance and protect habitat and riparian areas on the DVIR**
Sponsor: Shoshone-Paiute Tribes of the Duck Valley Indian Reservation

CBFWA tier: 1
ISRP review: Fund for one year to allow the project sponsors to better refine their project. Future long-term funding contingent on addressing deficiencies.

ISRP Comment/Question: The authors need to develop quantifiable biologically measurable objectives, without which one cannot evaluate whether the work achieves its goals.

Response: The project sponsors are currently working with other entities (Southern Idaho NRCS, Warm Springs Tribes, US Forest Service) that are doing spring development/enhancement projects to determine a biological approach to evaluating the success of the work. At the present time, the project sponsor is evaluating the success in growth of vegetation in the exclosure, water flows out of the spring head, and water flows in the streams adjacent to springs. Also to be included will be some HEP procedures in the exclosures to determine suitable habitat available for our numerous wildlife species.

ISRP comment: More detail is needed on how sites will be evaluated and the standards for success.

Response: Currently sites are selected with the assistance of the Shoshone-Paiute Livestock Association. Also, sites are selected on the basis of "protect the best" first. Springs that are in current good working condition are protected.

Once these sites are complete, rehabilitation on other springs that will take more intensive work can begin. These sites are selected with priority to the springs that are in pristine condition first, and degraded sites secondly. Also, as discussed in the proposal, springs that are in good condition and have constant all year flows of water are prioritized. These sites are high priority for the Tribes as well as the cattlemen. Another part of the project is the biological sampling of the streams and reservoirs. This work is done according to EPA field sampling protocols and is consistent with what others are doing in order to complete Unified Watershed Assessments.

**Project: 9702400 Avian Predation on Juvenile Salmonids in the Lower Columbia River**
Sponsor: Oregon State University/Columbia River Inter-Tribal Fish Commission

CBFWA tier: 1
ISRP review: Fund in part at FY99 level pending full review of results to date, expansion of the project is not sufficiently supported in the proposal. They should focus the research on managed and unmanaged Caspian Tern populations.

ISRP Comment/Question: The reporting of previous work is inadequate (especially in peer-reviewed publications) and may not warrant expansion of this already large contract.

Response: The Draft 1997 Annual Report for this project was reviewed by both fisheries and seabird biologists with the NMFS, USFWS, CRITFC, National Audubon Society, American Bird Conservancy, Pacific Seabird Group, as well as the Interagency Avian Predation Working Group. Having addressed all of the comments of peer reviewers in a revised final version of the 1997 Annual Report, which was submitted to the funding agencies in September 1998. This Final Annual Report was 70 pages, was widely distributed upon request to federal and state agencies, non-governmental organizations, and individuals, and has been widely cited as the authoritative source of information on the subject. Following this same process in completing subsequent annual reports to the funding agency.

The preparation and submission of manuscripts for publication in peer-reviewed, refereed journals is a high priority for this research project. The PI has published over 40 articles in refereed journals and is committed to publishing the results of this project in respected scientific journals. Although specific peer-reviewed publications are not listed as deliverables in our Statement of Work, a list of planned and expected publications and the targeted journal for each can be added if that would help address this concern of the ISRP. It should be kept in mind that data collection is on going and not all data sets are currently sufficiently complete for manuscript preparation. Other data sets are sufficiently complete and manuscripts will be prepared this coming winter. In addition, the ISRP may not be aware of the priority that the management agencies in the Interagency Avian Predation Working Group have placed on managing this problem and the extent to which this project is driven by adaptive management. The project sponsor agrees that the publication of research results in peer-reviewed, refereed scientific journals is essential, but must also fulfill the contractual obligations and reporting requirements to the funding agency and meet the information needs of the Interagency Avian Predation Working Group.

ISRP Comment/Question: The need for the proposed expansion of the research (monitoring of predation in additional bird colonies) is less convincing. The proposed work is very extensive and it is doubtful that it can all be successfully delivered in the timeframe identified.

Response: Since the establishment of the Interagency Avian Predation Working Group in May of 1998, the work has been largely driven by the decisions made by the fisheries and wildlife managers within that group. The research, monitoring, and evaluation objectives outlined in our FY 2000 proposal were developed in consultation with the Working Group and determined to be high priority tasks. For example, fisheries managers both within and outside the Working Group have expressed the need for more information on the potential impacts of several unmanaged bird populations, on the survival of juvenile salmonids in the lower Columbia River, in particular double-crested cormorants nesting in the estuary and Caspian terns nesting at two up-river colonies. Many of the tasks outlined in the FY 2000 proposal will help (1) determine the relative impacts of those bird populations on survival of juvenile salmonids and (2) develop potential management options to reduce those impacts. Assuming that the project is fully funded and the FY 2000 study objectives and tasks remain unchanged (i.e., no new objectives and tasks established by the Working Group), the project sponsor is confident that each of the tasks, as they have been described in our proposal, will be carried out.

ISRP Comment/Question: How does or will their research interface with other predation-oriented proposed work?

Response: As in past years, the project sponsor will assist NMFS (POC: Brad Ryan and Dick Ledgerwood) in their efforts to detect PIT tags on various waterbird colonies on the lower Columbia River. Using PIT tag data collected by NMFS to assess the relative vulnerability of different stocks, rearing types, and transported versus in-river migrants to predation by birds. Depending on funding availability and pending research results, whole fish collected at bird breeding colonies will be provided to OSU researchers (POC: Dr. Carl Schreck) to determine gill ATP-ase activity (index to smoltification) and the incidence of BKD and other pathological conditions. The project sponsor anticipates that additional collaborative and cooperative arrangements will be forged with other researchers and resource managers currently engaged in or planning work on piscivorous birds in the lower Columbia River.

ISRP Comment/Question: Why is the budget so large in 2000 as compared to previous years?

Response: The budget amount requested in FY 2000 ($642,600) is a 25% increase over the amount received in FY 1999 ($483,722). This is not a large increase given the additional tasks that will be carried out in FY 2000. Planning to intensify and expand the research efforts on up-river Caspian tern colonies, which involves setting up a field camp up-river and providing project staff to continuously monitor (7 days/week) those colonies throughout the breeding season (in previous years the project sponsor has visited up-river colonies only for two days every other week). Having proposed to collect information to accurately measure the magnitude of smolt losses to Caspian terns nesting at the colonies on Three Mile Canyon Island and Crescent Islands, two artificial islands. Also proposing to assess their foraging range and distribution, which is important in identifying effective methods to mitigate impacts. The amount of work to be done in the Columbia River estuary will also increase in FY 2000. If terns are successfully relocated to several different nesting locations (e.g., East Sand Island in the Columbia River estuary, Gunpowder Island in Willapa Bay, Whitcomb Flats in Grays Harbor, Commencement Bay) in FY 2000, the project sponsor will need to monitor diet, productivity, and foraging behavior at each of those colonies.

ISRP Comment/Question: Why is BPA now expected to fund the entire project as compared to previous years?

Response: Achieving the objectives outlined by the Interagency Avian Predation Working Group for research and monitoring of management actions will be no simple task, and the cost will not be trivial. It is reasonable to expect that funds to accomplish this work should and must come from a number of sources. The funding requested from BPA for this work is largely for the monitoring and evaluation of management actions, as well as research on other unmanaged bird populations on the lower Columbia River. In previous years (1997 and 1998), the U.S. Army Corps of Engineers provided funding for some of our research activities. In 1999, the Corps did not provide funding for the research, but instead funded the implementation of management initiatives (e.g., habitat management on East Sand Island, planting of winter wheat and erecting silt fencing on Rice Island, etc.). Presumably, the Corps will cover those same costs in 2000. The NMFS and USFWS provided some funding in 1999 for management, monitoring, and evaluation, and may provide additional funding in future years. WDFW is currently looking for funding to restore Caspian tern nesting habitat along the Washington Coast in 2000 and beyond. There may be other potential funding sources for this work that the project sponsor has yet to identify. Any additional funding (i.e., from sources other than BPA) provided for the research, monitoring, and evaluation was and will be used to expand our study objectives and tasks beyond those outlined in our Statements of Work to BPA (e.g., colony monitors on Rice Island in 1999, aerial surveys of other Pacific Coast Caspian tern colonies in 2000).

ISRP Comment/Question: In Task 2.1, the proposal states that “(populations) targeted for management in FY00 will be monitored if it is determined that....”. What if it is not determined? What happens to dollars that would otherwise be allocated to such monitoring activities?

Response: Based on results from 1999 and recent decisions made by the Working Group, the project sponsor will monitor all Caspian tern and double-crested cormorant colonies located both up-river and in the Columbia River estuary in FY 2000. The funding requested be not in excess to what is needed to cover the cost of the research, monitoring, and evaluation activities outlined in the FY 2000 proposal.

ISRP Comment/Question: Too much money seems proposed for expenditure on aerial surveys of foraging behavior. Are these really needed? Are they of high priority?

Response: The radio-telemetry results are critical in (1) evaluating the effectiveness of management initiatives implemented to reduce avian predation on juvenile salmonids in the Columbia River estuary, (2) adaptively managing bird predation, and (3) developing new management initiatives that are likely to be effective. For example, in 1999 radio-telemetry results have provided us with new and unexpected information on the foraging distribution of Caspian terns nesting on Rice Island and the difference in foraging distribution of terns relocated to East Sand Island. If there is not an appreciable change in foraging distribution and habitat utilization of managed bird populations, additional measures could be implemented to further protect juvenile salmonids. For currently unmanaged bird populations, such as the Three Mile Canyon Island and Crescent Island Caspian tern colonies, results of radio-tracking will provide information on foraging range and distribution that will tell us which stocks are most vulnerable and where. This information is critical in developing effective measures to reduce the impacts of unmanaged bird populations on juvenile salmonids.

**Project: 9702600 Ecology Of Marine Predatory Fishes: Influence On Salmonid Ocean Survival**
Sponsor: National Marine Fisheries Service, Northwest Fisheries Science Center

CBFWA tier: 1
ISRP review: Delay funding until they convincingly address the concerns raised in the ISRP's FY99 report and the concerns raised here. They need to specify how they are going to estimate population size of predators to calculate overall impact. The sampling program is inadequate both temporally and spatially to accurately estimate the predation rates and potential impacts. Implementing a two stage sampling procedure as described in the comments can potentially reduce the problem of small sample size.

ISRP Comment/Question: Delay funding until they convincingly address the concerns raised in the ISRP's FY99 report and the concerns raised here. They need to specify how they are going to estimate population size of predators to calculate overall impact. The sampling program is inadequate both temporally and spatially to accurately estimate the predation rates and potential impacts. Implementing a two stage sampling procedure as described in the comments can potentially reduce the problem of small sample size.

Response: While the ISRP has some very good specific questions, they have not accurately characterized the focus of the study. The overall objective of this project is not to quantify total predation rates on salmonids, which would require an estimate of absolute predator population abundance, but to identify if there is any relation between the timing, distribution, and abundance of various known predatory fishes and salmonid ocean survival. This relationship will be assessed in terms of associations among predatory and forage fish with respect to habitats in both a temporal and spatial context. Against this backdrop, the influx of outmigrating juvenile salmon will be juxtaposed to identify potential impacts on salmon survival as well as to arrive at an empirically derived estimate of juvenile salmon consumption rates by piscine predators.

The focus will be to describe temporal and spatial changes in the fish community in the coastal ocean associated with the Columbia River during the salmon outmigration and early summer period and to estimate the trophic linkages between potential salmon predators and the available prey. No attempt will be made to estimate total population abundance of predators, but efforts will be made to identify the timing of 'relative' abundance of predators within the study area. Estimates of predator population abundance in the Columbia Statistical Area are available from the NMFS triennial surveys.

The comments by the reviewers are correct in implying that the sampling scheme may not provide estimates of predator population abundance. This study represents the first step in quantifying the importance of fish predation on salmon survival by identifying the links between predator and forage fish association in concert with juvenile salmon predation by fish predators during the period of juvenile salmon outmigration into the marine environment.

ISRP Comment/Question: The research question is adequately explained, but the utility of the information (how it can/will be used) is not explained well enough to be convincing.

Response: The timing of the arrival and feeding habits of marine predatory fishes off the Columbia River probably have a strong negative impact on the survival of Columbia River juvenile salmon. Potential utility includes: 1)

prediction of overall salmonid ocean survival if survival is directly related to predator abundance, 2) prediction of ocean survival of particular groups of salmonids (e.g., those arriving at the ocean in early April versus July ), 3) identifying the role of Columbia River flows (i.e., plume) and oceanographic conditions on the distribution and abundance of marine predatory fishes. If the distribution of predatory fishes is affected by Columbia River flows, flows could be modified. If the occurrence of predatory fishes correlates with specific oceanographic conditions, hatchery salmonids could be released when oceanographic conditions are best for salmonids.

ISRP Comment/Question: The objectives are clear, but the measurables are weak (e.g. what happens if the number of predators captured is too small? How will the experiment design be modified?).

Response: This is an ecological study. If the number of predators is small then abundance estimates and potential predation effects on salmonids would be reduced accordingly. Nevertheless, past experience (i.e.,1998 trawl data) indicates that large numbers of hake, mackerel, and other fishes will be captured during the survey period.

ISRP Comment/Question: Results obtained from previous work are not sufficiently discussed or interpreted, apparently because analyses are still ongoing.

Response: Data from 1998 are still being analyzed.

ISRP Comment/Question: Each reviewer stated concerns about the methods presented. Items of particular concern are: (a) how the population size and distribution of the predator species will be determined;

Response: Predator densities will be estimated using area swept (trawl mouth area x amount of water strained through the net). Population densities will be mapped by station and abundance contours shown (using GIS) and overall abundance in the study area estimated by summing abundances of all areas. Trawl efficiencies will be assumed to be 1.0. Trawl efficiencies are undoubtedly less, so the predator density estimates will thus be minimum estimates.

ISRP Comment/Question: (b) the months of coverage;

Response: April through July. Salmonid mortality is believed to be highest when smolts first enter the ocean. Earliest migrants enter the ocean in April. Subyearling or ocean type chinook start entering the ocean in July. While sampling could be continued through August and September, the focus is primarily on yearling smolts to minimize costs.

ISRP Comment/Question: and (c) the adequacy of the sampling rates to study predation by large marine populations.

Response: The sampling rates are adequate. However, since there are no previous or historic datasets, this could be considered one of the questions for this research project. Nevertheless, the proposed sampling is extensive enough to answer the questions posed. Additional sampling would be expensive – both for boat time and personnel. It is prudent not to have an over ambitious sampling program until more data are available.

ISRP Comment/Question: We could not find any description of how predation rates might be calculated based on collected data, which is a critical concern.

Response: Salmonid predation rates will be calculated for each sampling period for each sampling area (i.e., polygons around each trawling effort). From the trawl data, the number (density) of predators feeding on salmonids within an area will be estimated. These data, plus information on digestion rates, food habits, and feeding times (many are very crepuscular feeders) will permit estimates of total number of salmonids eaten within each area during each sampling period (day). Summing the data from each area will provide an estimate of total number of salmonids eaten per sampling period. These data can be expanded (multiplied by number of days) to provide estimates of total salmonid predation.

ISRP Comment/Question: It is suggested that the sampling design be modified to incorporate a two-stage process of less detail (e.g. only presence/absence of juvenile salmon) which will include a much larger number of predator stomachs while at sea as well as the detailed examination of stomachs returned to the laboratory.

Response: In 1998 and 1999, the sampling design included a two-stage process and this plan will be used again in 2000.

ISRP Comment/Question: The proposed budget generally appears reasonable. However, the proposed required purchase of a new trawl should be further investigated. The project description indicates that this same type of trawl was used in 1998. Trawls typically last many years, so was this trawl purchased previously and if so, is it still available? If not, is it cheaper to rent a trawl than purchase another one?

Response: A trawl was purchased in 1999--no need in 2000 and budget should reflect this change. Now NMFS has 2 nets. One of these is for backup, as past experience indicates that hang-ups and large rips may occur. Having a backup net makes most efficient use of contracted fishing vessel time.

ISRP Comment/Question: Also, while no ship could be contracted in 1998, the use of the resulting surplus funds from 1998 has not been adequately identified.

Response: No ship was available in 1997. Preliminary survey work occurred in 1998 and is ongoing in 1999.

ISRP Comment/Question: This proposal could be an important companion to Project 9801400 in that it addresses the larger marine fish species that are not addressed in that proposal. We could not understand why this proposal was and has been funded as an entity separate from proposal 9801400 which seems most interested in its results.

Response: While these projects are linked, they have two different overall objectives and, as such, two different sampling protocols. Project 9810400 is looking at the health and survival of salmonid smolts in the plume and the sampling protocol is to collect as many smolts as they can in and out of the plume. Project 9702600 seeks to minimize capture of salmonids but concentrate on salmonid predators and possible competitors. To be comparable to other historical and other ocean salmonid samplings, Project 9810400 will sample during daylight. Large predators, such as hake, undertake diurnal migration to the surface at night where they become vulnerable to surface trawling. Mackerel and other large predators are very fast, visual predators that appear to evade surface trawls during daylight but are vulnerable at night; therefore, all sampling under Project 9702600 will occur at night (from dusk to dawn).

Primary Investigators for these projects are working closely together (e.g., sharing equipment, personnel, and information). The PI from Project 9702600 is directly involved with sampling and data analysis for Project 9801400 and presently working on a publication that compares these datasets.

ISRP Comment/Question: Finally, while an understanding of marine predation would be of enormous scholarly interest, one reviewer questioned the payoff from such research. Outmigration timing has minimal manipulation, especially for wild fish. The proposal needs to better justify the benefits of collecting these data.

Response: If and when Northwest salmonid populations increase, the scientific community needs to know if the increase is due to ocean conditions or due to active management of freshwater habitats. Only by studying and monitoring ocean conditions will this information be known. Detailed information on ocean conditions promises to identify what specific oceanographic conditions are best or worst for salmonid survival. Ocean data, if incorporated into transportation and hatchery practices, may increase ocean salmonid survival and adult returns if the timing of optimum ocean conditions can be identified and predicted. Salmonids spend most of their lives in the ocean, we presently know very little of this life stage. A complete understanding of salmonid life history will enable us to better manage the population fluctuations as they continue to occur.

ISRP Comment/Question: It was noted that these proponents did not address the ISRP's FY99 comments, Appendix A, page 2.

Response: The project sponsor incorporated the ISRP's FY99 comments in the FY2000 proposal.

**Project: 9703000 Monitor Listed Stock Adult Chinook Salmon Escapement**
Sponsor: Nez Perce Tribal Fisheries/Watershed Program

CBFWA tier: 1
ISRP review: Fund. The emphasis should be on research and development and peer-reviewed publication of results. Major review recommended in one or two years to evaluate the benefits of the technology and the applicability to other systems.

ISRP Comment/Question: The proposal fails to include the very important aspect of comparing the cost of this method with that of multiple-count redd surveys.

Response: This project remains in the experimental, research phase. A cost comparison of video and multiple pass methods will not be available until equipment requirements and procedures are finalized and the methodology is proven. If redd surveys will be continued for other purposes, a comparison of video and redd count costs becomes a moot point. Continuation will be based on the value of accurate fish escapement and other information provided to fish managers.

ISRP Comment/Question: The opinion that the monitoring facility will not influence fish passage is unsubstantiated and probably wrong. Chinook salmon are known to be very shy of structures resembling the proposed device. The proposal says (p. 12) that "the fish counting station did not appear to impede fish movement or displace spawning downstream in 1997 and 1998." But did they really look at this situation? By what method? Where is the evidence of no influence? A much different situation has been found for chinook (and maybe other fishes) at other barrier-like facilities.

Response: The Monitoring and Evaluation Plan suggested by National Marine Fisheries Service and Idaho Department of Fish and Game was in place for the second year. This plan consisted of daily snorkel and visual bank observations, methods of determining impacts to migrating salmon, and guidelines for corrective action if necessary. Fish moved freely upstream and downstream through the fish counting stations (4.1 passages per fish at Secesh River and 4.7 passages per fish at Lake Creek) and even remained in the counting chamber for periods of time. No fish were observed in the same location in the downstream portion of the project area two consecutive days. The percent of redds downstream of the Secesh River fish counting station in 1997 and 1998 was within the range of the five years (1992 – 1996) prior to the initiation of the project. The fish counting station does not trap or handle fish and does not bother fish in any way while they are on the spawning grounds. The fish counting station did not appear to hinder fish passage or displace spawning downstream.

ISRP Comment/Question: The proposal indicates that the equipment does not work well. Especially in view of high susceptibility to flood washout, disruption by turbidity events, and inevitable equipment malfunction, how could this fragile, high-tech, failure-prone method be better than redd counts? Redd counts are simple and reliable, usually don't require fancy, expensive equipment (unless a helicopter is needed), and don't disturb the fish much. The video technique is complex, unreliable, expensive, and could be highly disruptive of fish migration.

Response: Operation and reliability of the fish counting stations is improving each year as experience is gained and backup equipment is purchased. In 1998, the Lake Creek fish counting station was in place 16 days prior to the first fish passage. The two fish counting stations were operational 92.5 % (Lake Creek) and 92.4 % (Secesh River) of the season. There were 14.5 hours of data lost at Lake Creek due to video equipment failure and none at Secesh River. Turbidity made data analysis hard at times, but only major turbidity events prevented collection of data. Adjustments to fish counts for down time were minor and easily calculated. Videotapes were manually collapsed onto a VHS tape for efficient data collection, verification and later review.

Video methodology obtains escapement for a complete area, not just index areas that might not be representative of the entire system, or that could be affected by local conditions (e.g. sedimentation or floods that affect that specific location). There are also differences between IDF&G and NPT redd count methodologies. In two index areas in Lake Creek in 1998, NPT counted 40 redds and IDF&G 54 (35% more than multiple pass). In comparison, videotapes had an escapement of only 31 females (47 total fish) into the entire stream. Fish numbers are subject to little interpretation and appear to be very accurate. Video fish counts appear to be lower or more conservative than

redd counts indicate. Managers should be aware of this difference if basing decisions on redd count numbers or trends.

**Project: 9703800 Preserve Listed Salmonid Stocks Gametes**
Sponsor: Nez Perce Tribal Fisheries/Watershed Program

CBFWA tier: 1
ISRP review: Fund in part. Do not fund the portion to cryopreserve female genetic material, as this part of the proposal is too uncertain and experimental. While the objective appears worthwhile, other funding sources such as USDA or NSF may be more appropriate to support basic research and technology development.

ISRP Comment/Question: This project describes work that seems important to at-risk stocks. Systematic sampling of gametes for cryopreservation along with detailed documentation would seem to be at a premium. The project should develop a careful sampling protocol that includes an examination of the implications of using fish from a hatchery environment. The objective of this project is to provide an additional safeguard against extinction. The strategy should be to gain representative samples of salmonid gene diversity present in the basin. Sampling should account for the fact that salmonids probably occur in metapopulations (relatively large populations comprised of sub-populations). The proposal does little to convince a reader that sampling needs have been considered in detail and within the context of the structure of these populations.

This project and the captive brood project should be part of the same program, or at least closely managed as parts of a single program. The captive brood program cannot possibly protect the genetic diversity present in the Columbia Basin, nor can it protect the structure even of the populations taken under culture for extended periods. The cryopreservation project should obtain samples that represent the populations under the captive brood program, but its primary thrust should be to obtain samples to represent all sub-populations of the basin's metapopulations. Small sub-populations are at greatest risk in the basin and they are likely a major source of gene diversity.

Response: The goal of the Salmonid Gamete Preservation Project is to preserve the genetic diversity of salmonid populations at high risk of extirpation through cryopreservation. Long and short-term gene banks have been established and are being maintained. The collections of fish gametes from a hatchery environment are simply to increase the genetic diversity in the gene bank.

The implications of using listed fish from a hatchery environment are extremely important and are currently being discussed among the salmon managers in the basin. A strength of having a gene bank is the genetic material is available when the fish are not, so if a hatchery has a skewed sex ratio with no ripe males available, sperm can be made available by thawing straws whenever it is deemed necessary by management.

There is a discrepancy in the recommendations concerning merging this project with the captive brood program. To combine this project with the captive brood project would severely limit the scope of collections within the Snake River basin, thus decreasing the genetic diversity preserved. The project's primary thrust is to obtain samples representing all subpopulations of the basin's metapopulations. The captive brood project is for the Grande Ronde River system only and then just three streams are being sampled. It is agreed that small subpopulations are at the greatest risk for extirpation, therefore the project should encompass as many of those sub-populations as possible. Logistics of this approach are considerable, and coordinating with other projects to place enough sampling effort in streams sampled to date. Sampling all subpopulations would require a substantial increase in staff and in the budget.

ISRP Comment/Question: An argument is included in the proposal to justify determination of each fish's genotype. This level of detail is not necessary. The research team only needs to ensure that the samples collected adequately represent the gene pool of what remains of a population in their samples. This is a statistical problem; genotypes are not necessary. They propose to maintain a constant monitor on each stream to enumerate redds and establish spawning times. One strategy is to identify "spawned out males" to obtain their samples. There probably is no such thing as a "spawned out male." It may be more appropriate to set up monitoring stations downstream from spawning areas and capture males that drift through the area via nets or capture fish at existing weirs or other diversions. The genetic manipulation (selected matings) described in the proposal should be abandoned. Mating strategies should provide as close to random mating as possible.

Response: In response to the level of genetic analysis done on the current inventory of cryopreserved salmonid germplasm, a preliminary Chinook salmon baseline population analysis has been conducted. This analysis assesses the current gene pool of the Chinook being sampled using mitochondrial haplotypes of each individual to evaluate geographic heterogeneity. Nuclear markers have been used to determine several genotypes. For the purposes of using cryopreserved milt, you would want to determine genotypic frequencies among the individuals for which cryopreserved sperm taken from for comparison to the wild spawning stocks. Comparisons in genotypic frequencies ensure they represent the diversity in the wild populations.

Chinook and steelhead populations in the Snake River basin are so depressed that genetic information about the spawners can be used to ensure that you do not lose genetic diversity through drift. This is not genetic manipulation and it is not selection, it is equalizing the change in genotypic and allelic frequencies to maintain the diversity present in the parent spawners.

The "spawned-out male" terminology originated with the National Marine Fisheries Service (NMFS) as part of the Section 10 permit process. NMFS has indicated those only spawned out males, or males that have already spawned naturally should be collected so as not to adversely affect reproductive spawning success. A mature male salmon can be spawned out if no semen is present in the testes. It is widely recognized that male salmon regenerate semen after spawning.

ISRP Comment/Question: Work to preserve embryos should be proposed as a separate project by the principal investigator actually doing the work. The proposal, which might be more appropriately directed to NIH or NSF than to BPA, should carefully outline past trials and summarize present knowledge. It should provide details of experimental methods. Such work has been going on for many years in a variety of labs without success, so the funding agency should be prepared to either fund specific experiments with completion dates or be prepared to continue the funding indefinitely.

Response: Salmon managers from the Columbia River basin advise that since this project preserves half the salmonid genome by cryopreserving only the male gametes, research is necessary to freeze female gametes to achieve a full complement of the genetic material preserved. Other federal funding agencies (NIH, USDA, and NSF) do not have fisheries research as a priority. Past trials and a summary of present knowledge is in section 8 of the proposal, which lists 6 references from research conducted in the past 4 years. A quick review of this literature suggests that the greatest obstacle to freezing eggs/embryos is in getting the cryoprotectant absorbed into the egg (Hagedorn 1998). The results of this research would be reported and reviewed annually with an estimated completion date of 2004. This is short-term research which needs minimal, but steady funding for 5 years. The bottom line in-terms funding this experiment is that the amount of money being requested is small and the potential payoff is critical for germplasm conservation.

**Project: 9705100 Yakima Basin Side Channels**
Sponsor: Yakama Indian Nation - Fisheries

CBFWA tier: 1
ISRP review: Delay funding until the proposal is redone including: (1) the technical justification for off-channel work relative to other potential restoration activities, and (2) an identification and description of priority off-channel sites through #9704700, #20117, and/or objective 1 proposed here. These results should be used to prepare implementation objectives based on the sites in greatest need of protection or restoration. The budget request for easements/acquisition and construction work could then be tied to specific sites and actions.

ISRP Comment/Question: Delay funding until the proposal is redone including: (1) the technical justification for off-channel work relative to other potential restoration activities, and (2) an identification and description of priority off-channel sites through #9704700, #20117, and/or objective 1 proposed here. These results should be used to prepare implementation objectives based on the sites in greatest need of protection or restoration. The budget request for easements/acquisition and construction work could then be tied to specific sites and actions.

Response: The Yakima Basin is experiencing rapid residential and commercial development. As this has occurred, fisheries habitat function has deteriorated through diking, removal of riparian vegetation, water withdrawal and placement of fill and structures in the geomorphic floodplain. This project strives to protect sensitive habitats from inappropriate development through acquisition or purchase of conservation easement. Where deemed appropriate by tribal and state biologists, restoration efforts will be undertaken to reconnect rearing habitats that have been artificially blocked by dikes, roads or other structures. However, the primary emphasis of the project is protection, through property acquisition.

Geographic areas were prioritized by review of the Yakima Subbasin Plan (NWPPC, 1990), and through consultation with tribal, state and federal fisheries and habitat managers. The Basin is composed of large alluvial depositional areas, separated by basalt ridges. Priority reaches are within the deposition zones, because presence of off-channel rearing habitats, and riparian habitats are the most productive in these areas. Further, human pressure to develop in these large flat areas is much greater than in steep-walled canyons.

The project is based upon a “willing seller - willing buyer” approach. There are limitations on the amount of property that can be protected through this program, because some landowners may not be prepared to sell an easements or property.

The project intends primarily to protect remaining high-value habitats through fee simple purchase or establishment of conservation easement. Limited monitoring will be conducted to control undesirable vegetation, and to establish preferred riparian species, however extensive monitoring of fish use will not be conducted for protection efforts. Restoration efforts will be monitored, through snorkel or beach seining surveys to determine fish abundance in treated areas. Additional monitoring will likely be conducted under other projects.

Preliminary findings of several other projects, including the Yakima Klickitat Fisheries Production Project and the Yakima Side Channels Survey and Rehabilitation Project were used to prioritize reaches. This project will continue to use recommendations of these and other projects to determine priority areas for protection and restoration efforts.

**Project: 9705700 Salmon River Production Program**
Sponsor: Shoshone-Bannock Tribes

CBFWA tier: 1
ISRP review: Do not fund, technically inadequate.

ISRP Comment/Question: Do not fund, technically inadequate.

Response: Technical inadequacies are due to the age of the project. The project had only been funded for six months when the proposal for FY2000 funds was submitted. The Shoshone-Bannock Tribes are now at the first step of a detailed three-step process that is required by the NPPC to continue funding. The first step is to develop a Master Plan for the Salmon River Basin. Such a plan does not presently exist, and will incorporate not only production actions, but also harvest and habitat requirements. There is no other project in the NPPC Fish and Wildlife Program to develop this master plan. The extreme importance of the nature and scope of the Salmon River to anadromous fish productivity, and the absence of a master plan for future production actions in that basin, makes funding this project a worthy cause.

ISRP Comment/Question: This proposal requires greater detail and clearly stated objectives with provisions for monitoring and evaluation of results.

Response: Detail is lacking because, as stated above (and as a recurring response to the ISRP comments), the project is at the first phase – development of a master plan for production (and related) actions in the Salmon River Subbasin. The scrutiny from many entities that is part of master planning will force a high level of detail to be developed during the FY 1999 funding, in preparation for initiation of implementation in FY 2000.

Objectives are clearly stated in sections 7 and 8e of the proposal: redirecting artificial production efforts to recover declining wild fish populations; constructing low-cost streamside incubation and rearing, acclimation, volitional

release and broodstock holding facilities; reforming existing hatchery programs and facilities in the Salmon River; and providing fish culture education and training for SBT Tribal Members as part of the federal government's trust responsibility to treaty tribes.

Specific monitoring and evaluation parameters aimed at measuring whether biological objectives are met are detailed in section 8f, including the number of eggs hatched, number of fish released, survival at life stage, adult returns, and natural reproduction success of returning adults.

ISRP Comment/Question: Its content is directed toward developing a rather unspecified method of artificial propagation and description is lacking of any results of previous funding in 1996-98.

Response: BPA funding for this project started in May, 1998 (as stated in section 8d) and was only approximately six months old when the FY 2000 proposal was submitted. Results of previous production actions (since 1995, and limited to side-stream incubation) that were funded through other sources is currently in final report development.

ISRP Comment/Question: Except in describing other projects (Sec. 8c), it addresses fishery resource problems only in the vaguest of terms.

Response: Sections 8a, 8b and 8e describe these problems – primarily, that highly technical and quantity-oriented artificial production strategies and actions have not successfully mitigated for losses of naturally-producing populations (the past and present production programs in the upper Salmon River do not include the objectives of restoring naturally-producing populations).

ISRP Comment/Question: Hatchbox technologies could be tested on a much smaller scale.

Response: They have been. For example, the Oregon STEP program, the Washington Remote Site Incubator projects, the California SASEP and Truckee River, and projects in Wyoming (Green River and Snake River). The major passage migration barriers present for Salmon River anadromous fish populations and resultant smolt-to-adult survival rates cause the test of this technology in the Salmon River to be of a larger nature than elsewhere. The urgent nature of salmon recovery in the Salmon River basin precludes proceeding on a smaller scale. Knowing that salmon (including steelhead fry) can be produced using low tech on-site incubation, but needing to work at a level of production that will allow for evaluation beyond hatch rates and numbers of fry released. Under the present conditions of high mortalities due to the disruption of migratory corridors, adequate evaluation is not possible if the project is conducted on a small scale. The program should expand to a level that will produce adequate numbers of fish to provide for suitable evaluation.

ISRP Comment/Question: Additionally, with a budget request of $913K, the proposal would be "low tech" at a very high price.

Response: What is the ISRP's criteria that calls for a determination of cost effectiveness or appropriateness? Compared to other production programs that are aimed at providing restoration of naturally-producing anadromous fish (e.g., Yakima-Klickitat Fish project, Pelton/Hood River Production Program, programs in the Umatilla and Walla Walla subbasins, and the Nez Perce Tribal Hatchery projects), the anticipated construction and facilities cost is potentially extremely effective.

ISRP Comment/Question: There is no provision for cost sharing.

Response: The proposal authors failed to mention cost sharing with the Department of Energy (through the Idaho National Engineering and Environmental Laboratory / Shoshone-Bannock Jr./Sr. High School), and Bureau of Indian Affairs (through the SBT Fish and Wildlife Management Development Program).

ISRP Comment/Question: Stream-side incubators a) have received favorable media attention and suggest increasing local awareness of the issue and b) have involved many young people in the process, but their biological efficacy should be assessed and compared with other options before the program is expanded.

Response: This issue, and the necessary comparisons of other alternatives, will be an essential part of not only the master planning process, but also the NEPA and ESA requirements under Step 2 of the NPPC process.

ISRP Comment/Question: As it stands, the project is almost purely activity-oriented rather than fishery-results-oriented, and thus appears to be busy work.

Response: The on-the-ground production activities (e.g., side-stream incubation) that is occurring while the master plan, NEPA, ESA, and engineering design and feasibility work is performed are activities that are 100% fish-resource oriented. The SBT are strong proponents of learning while doing (just do it) rather than getting mired in studies (analysis paralysis) of potential actions. Such studies are important to resolve critical uncertainties if such uncertainties prevent initiation of actions, as is monitoring and evaluation in order to adaptively manage. However, it is at least equally important to the SBT initiate to actions to help prevent the imminent extinction of Snake River wild anadromous fish populations.

ISRP Comment/Question: Nowhere in the proposal are any scientific principles or theory stated.

Response: Principles and theories are stated in the document: Section 8b - "highly technical production strategies have not successfully mitigated losses of natural production;" Section 8d – "initiate low-cost, low-tech alternatives and improvements to existing hatchery programs;" Section 8e – "Determine if significant adult returns and successful natural reproduction to the natural environment occur by using this technology;" Section 8e – "test whether low-tech artificial production methods can increase egg-to-fry survival over natural in-gravel incubation while increasing production from fry-to-adult compared to current hatchery strategies;" and, "utilize hatcheries to return fish to the natural environment while maintaining harvest opportunities;" and, Section 8f – "juvenile fish would be more naturally acclimated to their rearing environment as a result of volitional releases…[and] providing a more natural rearing environment is believed to increase survivals of smolt-to-adults relative to fish incubated, hatched and reared in a traditional hatchery and transported to release sites."

**Project: 9706000 Clearwater Subbasin Focus Watershed Program - NPT**
Sponsor: Nez Perce Tribal Fisheries/Watershed Program

CBFWA tier: 1
ISRP review: Delay funding until they demonstrate relation to fish and wildlife and include a clear statement of overall objectives of this project, the relationship of project objectives to overall basin restoration objectives, as well as timelines, and a rationale (prioritization via a watershed assessment) indicating why specific elements are being undertaken, and in what order. A comprehensive review, via a visiting committee, of all habitat restoration projects within the Clearwater basin is needed.

ISRP Comment/Question: Delay funding until they demonstrate relation to fish and wildlife and include a clear statement of overall objectives of this project, the relationship of project objectives to overall basin restoration objectives, as well as timelines, and a rationale (prioritization via a watershed assessment) indicating why specific elements are being undertaken, and in what order.

Response: A number of activities must take place to ensure that restoration in the Clearwater River Subbasin proceeds in the most organized and effective manner possible. The Clearwater is a massive system—approximately 9,645 square miles—with a complex pattern of private, tribal, and governmental ownership, with multiple jurisdictions, and multiple understandings of how fisheries restoration in a subbasin should proceed.

The primary objectives of the co-coordinator positions are to facilitate and coordinate the objectives in the Habitat Goal, Policies and Objectives section of the NWPPC Fish and Wildlife Plan (1994), especially as they pertain to model or focus watersheds. A central goal of the NWPPC Fish and Wildlife Plan is to restore anadromous fish populations in the Columbia River Basin, including the Clearwater Subbasin (NWPPC, 1994). This goal is embraced by and actively guides the activities of both co-coordinators for the Clearwater Subbasin Focus Watershed Program.

The goal of the co-coordinator position is to carry out the basin-wide objectives of the NWPPC Fish and Wildlife Plan in the Clearwater Subbasin. These specific objectives are described in Section 7.6 and 7.7 of the plan. To clarify the specific objectives for the Clearwater Subbasin Focus Watershed Program the specific objectives in section 7.7 will be discussed in the context of the history of the program.

ISRP Comment/Question: A comprehensive review, via a visiting committee, of all habitat restoration projects within the Clearwater basin is needed.

Response: The Clearwater Subbasin Focus Watershed Program is currently completing Phase 1 of the project. This phase includes the first iteration of a planning process (launched with the completion of the Clearwater River Subbasin Salmon and Steelhead Production Plan in 1990), the completion of the first round of priority implementation projects identified in the planning process, and the development of a series of conceptual frameworks, processes, and products that will guide Phase II of the program. The Clearwater River Subbasin Salmon and Steelhead Production Plan was the first attempt at a basin-wide assessment and plan. The plan included limited discussion of habitat problems, focusing largely on supplementation goals within the subbasin. Numerous watershed assessments (largely focused on 5$^{th}$ field USGS HUCs) have been completed in the Subbasin since the 1990 plan. These have been used, where available, to refine the prioritization of activities within watersheds. The priority activities in the Plan and more localized assessments were refined and prioritized by the Nez Perce Tribe and the U.S. Forest Service. Current projects were prioritized based on this two phase prioritization process and on the basis of high priority needs (especially as pertaining to spawning and rearing habitat) of salmonid populations of concern in the Clearwater Subbasin. Current projects were initiated as part of the NWPPC Early Action Watershed Program. This initial round of prioritized projects will be completed over the next 5 years. Most will be completed sooner. These projects are clearly needed and have been identified through a multi-phase prioritization process that includes the only existing basin-wide plan, more recent assessments, and further refinement by staff in both the Forest Service and NPT. This initial prioritization process has included all steps as outlined in section 7.7B.2 of the NWPPC Fish and Wildlife Plan, including identifying and providing opportunities for all parties in the subbasin to participate in the development and implementation of the program (completed 1995 and ongoing); compiling all existing plans, programs, policies, laws and other appropriate authorities that relate to watershed management in the subbasin (completed 1998 and ongoing); identifying gaps and conflicts in existing plans, programs, policies, laws, and other appropriate authorities that hinder management in the subbasin (ongoing under FY 1999); setting out a path and procedures for filling gaps and addressing conflicts (ongoing FY 1999); identifying key factors limiting salmon and steelhead productivity (completed and ongoing); identifying priority on-the-ground actions to address key limiting factors (completed and ongoing); compiling a list of all human and fiscal resources for protection and improvement of habitat in the subbasin (completed and ongoing); providing for involvement of volunteers and educational institutions in the implementation of projects (completed and ongoing).

Current NPT habitat restoration projects fulfill NWPPC Fish and Wildlife objective 7.7B.3 “By the second year, begin implementation of priority on-the-ground actions that address key limiting factors for salmon and steelhead production . . . (1994).”

In many of these priority watersheds, assessment and planning has not been carried out at sufficient depth to plan all necessary activities in the watershed. Assessment and planning activities are currently being carried out to remedy this situation. These activities are described in greater detail later in this document, and in additional detail in the comments for individual projects. Because of the need for more assessment and planning before completing identified priorities, all current restoration projects have been chosen not only because they were prioritized through the process described above, but also because they were obviously necessary and could be completed while the more in-depth planning occurred. All activities will have to be completed regardless of the planning process and are obvious first steps while the assessments and planning processes are carried out.

Subbasin assessment and planning is a reiterative process in which new information must be processed, planning adapted based on the new information, and the prioritization process revamped to reflect new information.

To reflect this need, the Clearwater Focus Watershed Program has initiated the development of a framework for Phase II of the program. This process will include: 1) the development and coordination of a Clearwater Policy Advisory Committee and a Clearwater Technical Advisory Committee to help guide, review, and coordinate fisheries restoration in the Subbasin, 2) the development of a comprehensive subbasin assessment to characterize

current conditions, identify priority actions and priority geographical areas for action based on fish population dynamics and needs, 3) a basin-wide plan, 4) an umbrella monitoring and evaluation plan for all implementation projects in the subbasin that will fill critical basin-wide data gaps while providing project-specific monitoring and evaluation, and 5) identification and prioritization of critical data gaps that need to be filled for the next iteration of the planning process.

In addition to participating in the planning and prioritization process, the Clearwater Policy Advisory Committee will also participate in a policy setting and politically oriented process that will include: 1) tracking all restoration activities being carried out in the Subbasin, 2) developing and maintaining cooperative agreements between agencies and groups involved in fisheries restoration in the subbasin, 3) maintaining and increasing local and regional acceptance and collaboration with the program, and 4) leveraging resources to increase the overall level of restoration activities taking place in the subbasin.

The co-coordinators have begun organize the Clearwater Policy Advisory Committee and the Clearwater Technical Advisory Committee, and will coordinate the development of all process products. The Clearwater Technical Advisory Committee includess faculty at WSU and UI, personnel from agencies active in the subbasin, and personnel from the NPT. The establishment of these two groups will be completed and the groups will be fully operational during the FY 1999 portion of the project and their work will continue into FY 2000.

By June 2000, the co-coordinators will have completed the development of the Philosophical Framework for Fisheries Restoration in the Clearwater, which will help guide future planning. This document will apply the general principles of the NWPPC Fish and Wildlife Program, current strategies in the literature, and the principles laid out in the CRITFC restoration plan within the specific context of the Clearwater Subbasin. This philosophical framework will be discussed in Clearwater Policy Advisory Committee and the Clearwater Technical Advisory Committee both for feedback and to help further the development of common understandings. By involving everyone in the development of the framework document, the program will help ensure buy-in to the overall strategy for fisheries restoration in the Clearwater. This process will be completed by June 2000.

To meet the need for the development of a comprehensive subbasin assessment to provide an up-to-date synthesis of past and recent information, to synthesize research that fills past data gaps, and to prioritize specific actions in the subbasin, NPT has subcontracted with WSU to prepare a subbasin assessment and plan. This project started during FY 1998. The NPT co-coordinator has actively integrated this effort with current assessment and planning efforts in the subbasin, most notably those taking place within the Clearwater and Nez Perce National Forests. The co-coordinator will involve both the Clearwater Policy Advisory Committee and the Clearwater Technical Advisory Committee in the assessment and planning process. This product will be completed by June 2000.

Finally, the NPT co-coordinator will oversee the development of an umbrella monitoring and evaluation plan. This plan will provide an outline of chemical, biological, and physical monitoring activities that should be a part of all implementation, monitoring, and research projects in the subbasin. Specific procedures to meet information needs for evaluating specific BMPs will be recommended to supplement the umbrella plan. This plan will be designed to fill critical basin-wide data gaps while adequately evaluating site specific implementation projects. This product will be completed by June 2000.

The philosophic framework for fisheries restoration, the subbasin assessment and the umbrella monitoring plan are designed to meet basin-wide needs. They will be completed by June 2000 and will guide the development of FY 2002 projects to initiate Phase II of the Clearwater Focus Watershed Program.

Watershed specific assessment work will be concurrently carried out during FY 1999 and FY 2000 as well. All NPT projects will have rigorous monitoring and evaluation components, as described in the comments on individual projects. Watershed assessments using a modified version of the Oregon Manual of Watershed Analysis will be conducted on Lapwai and Big Canyon Creek Watersheds. As part of these assessments additional fieldwork will be carried out to fill critical data gaps concerning fish use and limiting factors (flow, temperature, and sediment in particular). Additional assessment work will also be carried out in Newsome, Lolo, and Mill Creeks to enable the strategic planning for the completion of Phase I implementation projects and to supplement and refine planning carried out in the early and mid-1990s. These assessment and planning activities will be completed during FY 1999 and FY 2000 project cycles.

The need for timelines has been addressed throughout this document in the context of specific activities and products.

ISRP Comment/Question: a) there is a danger of the work becoming fragmented and including activities not directly related to restoration goals, unless leadership is asserted by the coordinating personnel. To that end, an outline of the specific types of actions is required, as written this proposal lacks a convincing argument that anything other than "coordination" will result;

Response: Work is currently fragmented within the subbasin. One of the key purposes of the NPT co-coordinator position is to overcome this fragmentation by managing communications within the subbasin, providing an overall framework and process for coordinated fisheries restoration, and managing the planning, assessment, implementation and monitoring, and evaluation process. This is a very large subbasin with many stakeholders and active parties. This program was only initiated in 1997. The first two years focused on meeting the objectives laid out in section 7.7 of the NWPPC Fish and Wildlife Program. The remaining activities necessary to developing a functional subbasin-wide coordinating effort, a restoration framework, and a refined prioritizing assessment will be complete as part of FY 1999 activities. This process is described in detail earlier in this document.

ISRP Comment/Question: b) the project needs a more pronounced focus on increased flows that are closer to natural seasonal hydrographs,

Response: Flow issues are complex and require sufficient preliminary assessment and planning work to address. Work on flow issues will take place in FY 1999 to lay the groundwork for specific project planning in areas identified by the ongoing subbasin assessment to be completed in June 2000. Current projects reflect a prioritization process carried in the early and mid-1990s. Projects related to flow were not prioritized as part of that process at that time. The current Lapwai project submitted for FY 2000 does address flow issues in that particular watershed. Other flow work will result from the prioritized action plan developed as part of the current assessment to be completed in June 2000.

ISRP Comment/Question: and c) the proposal offers only a vague discussion of methods.

Response: A description of methods has been offered as part of the integrated narrative above.

ISRP Comment/Question: A typical example under Section e (project objectives) is the statement (for objective 2) that the product will be "watershed assessments …". Does this mean a report, or are on-the-ground improvements to be made?

Response: The watershed assessment will be a report. It will also be a critical planning document that prioritizes and lays the foundation for future on-the-ground activities. The assessments have been described in greater detail earlier in this document.

ISRP Comment/Question: The panel was particularly concerned about the apparent lack of a fisheries focus. For instance, the proposal states "The critical assumption upon which the program was initiated was the anticipation that all groups, governments, industries, and individuals with resource interests in the Clearwater basin would endorse a watershed level coordinated effort to address fisheries concerns" . Yet there seems to be no fishery biologist involved in the project.

Response: The particular idea criticized reflects basic and commonly understood processes that result in effective long-term restoration of fisheries resources. For example, Daniel Press (1994) shows that stakeholder involvement is fundamental to long-term solutions to environmental problems and is necessary to avoid a continuous round of lawsuits, backsliding, and conflict. C.A. Bower (1993) argues that the most important limiting factors in complex environmental problems are cultural; without involving and educating cultural groups in the process of change the activities and beliefs that created the problems will undermine attempts to improve conditions over the long run. Chantal Mouffe (1993) outlines how through the process of negotiating conflicts, when groups are respected and empowered as participants they are more open to changing and accepting outcomes than when those outcomes are imposed without their understanding or involvement in the decision-making processes. Chris Maser (1996) draws

from multiple case studies to show that stakeholders need to participate in the process of examining the relationship between their values and needs and the long-term biological sustainability of the ecosystem. Maser outlines a process that empowers stakeholders in understanding and developing collaborative solutions to large-scale, complex environmental problems. Not only is this approach well documented in the literature on environmental conflict and cultural change, it is broadly accepted and practiced throughout the region. Furthermore, it is specifically identified as an objective in section 7.7B2 of the NWPPC Fish and Wildlife Plan: "Identify all parties with an interest in each model watershed. Set up procedures to ensure that all these parties have the opportunity to participate fully in the development and implementation of the model watershed."

Fisheries biologists are actively involved in all projects in the program. Fisheries biologists are a part of the Technical Advisory Group.

Cleve Steward, Jay Hesse, Fred Rabe, Steve Todd and Dana Weigel are fish biologists or aquatic ecologists who are participating in these projects either as part of subcontracting groups, as project staff or as advisors. In addition, two project staff, Heidi Stubbers and Felix McGowan are in the process of obtaining their M.S. degrees in fisheries at University of Idaho.

ISRP Comment/Question: It appears that this project may be a physical-social exercise having no direct relation to the fish or in which the genuine fishery aspects will be easily lost sight of.

Response: All projects are prioritized on the basis of potential impacts on fish. The program has been developed to meet the objectives of the NWPPC Fish and Wildlife Program. The assessments and planning documents that will be produced during FY1999 activities are focused on understanding current conditions of fish habitat, limiting factors to fish populations, and priority actions to restore fish populations. While many of these activities are in fact physical activities designed to eliminate specific limiting factors, the ultimate indicator of success is restored fish populations. The improvement of the physical condition or parameter is a means towards the end of restored fish populations.

Biological effectiveness of projects will ultimately be determined by the response of fish populations to the restoration program. If they increase in stability, it will be known that restoration activities have been successful; if they decrease in stability, it will be known that ultimately, the project has failed. Limiting factors, especially in areas with cumulative effects, are complex and fish populations may not immediately respond in a short time period. To further gauge biological effectiveness of program activities, benthic macroinvertebrate monitoring will be included as part of a comprehensive monitoring program to better understand biological impacts of all projects.

ISRP Comment/Question: Finally, the proposers appear to have ignored Council's guidance that watershed assessments are to be the basis for restoration efforts, and are to be completed before embarking on specific restoration project elements. No indication is given of how the project relates to a watershed assessment, or if one even exists

Response: This criticism reflects problems in the proposal writing process rather than deficiencies in the program. The relationship to watershed assessments of the overall program has been described above. The relationship of individual projects to watershed assessments is described in the individual project response. In general, current projects were initiated as part of the Early Action Watershed Program plan after being chosen by NPT through a two phase prioritization process described at length earlier in this text. In areas such as Lapwai and Big Canyon, where current assessments were sufficient to begin work on priority limiting factors but insufficient to carry out other specific necessary work, assessments will be completed as part of FY1999 activities. Additional assessment and planning activities are part of many of the FY 2000 proposals as well. Current projects reflect necessary, obvious needs that have been identified in past assessment efforts, and that would undoubtedly be identified as part of any future assessments. It is necessary to carry out these activities while more in-depth planning work is being carried out.

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Mouffe, Chantal. 1996. Return of the Polical. Routledge.

Northwest Power Planning Council. 1994. Columbia River Basin Fish and Wildlife Program. Portland, OR.

Press, Daniel. 1994. Democratic Dilemmas In the Age of Ecology: Trees and Toxics in the American West. London: Duke University P.

**Project: 9800100 Analytical Support-Path And Esa Biological Assessments**
Sponsor: Hinrichsen Environmental Services

CBFWA tier: 1
ISRP review: Do not fund. PATH, in its present form, with its present mission, should be phased out. A simpler process could be created to meet the continuing need for evaluation of the limited data now available to address management questions relative to the hydro biological opinion. A more ambitious and comprehensive scientific consensus process should be developed, somewhat along the lines of PATH, to address data collection design issues for the basin, to identify data needs that are critical to the actual management questions, and to ensure that data needs are met, to the extent practical, as quickly as possible, in a coordinated and efficient manner.

ISRP Comment/Question: This proposal describes very clearly what is being pursued, but it is unclear how it will be used in the PATH analysis.

Response: The work will provide biological rationale for hypotheses, and develop and test model structures that identify key uncertainties in salmon life-cycle survival process as part of PATH. The work will involve designing alternative adaptive management experiments that maximize learning. Specifically, the project sponsor will develop techniques for determining when a climate/ocean regime shift has occurred and for understanding how a regime shift effect could be confounded with the effects associated with different adaptive management experiments.

ISRP Comment/Question: It appears that such as chaotic dynamics will not simplify the modeling; thus, it is contrary to the SRP recommendation that the PATH models are already too complicated.

Response: The project sponsor is not recommending that PATH use a model that projects chaotic dynamics into the future and none of the models used in PATH have this feature.
None of the life cycle models the project sponsor has developed are more complicated than a Ricker curve, with some modifications to account for juvenile passage / transportation mortality and common year effects between different groups of index stocks. Admittedly, the explanation and presentation of results by PATH has been over-complicated, but recent simpler presentations (example, the NMFS A-FISH appendix) of PATH results that focus on additional risk and equilibrium spawner numbers, and highlight the most important key hypothesis, have made the PATH results more understandable and useful.

**Project: 9800300 O&M Funding Of Wildlife Habitat On Stoi Reservation For Grand Coulee Dam**
Sponsor: Spokane Tribe of Indians

CBFWA tier: 1
ISRP review: Delay funding until more sufficient detail is given on operation, maintenance, and monitoring for wildlife values in terms of biological gains for target species.

ISRP Comment/Question: Delay funding until more sufficient detail is given on operation, maintenance, and monitoring for wildlife values in terms of biological gains for target species.

Response: Based upon its status as an ongoing project with HEP and management plans completed, the Caucus approved this project for continued funding.

This project is an on-going project in which the Spokane Tribe began mitigation measures through the Washington Coalition. In 1996, the Spokane Tribe secured $1.778 million dollars from BPA to begin implementing the purchasing of lands for partial mitigation for loss of wildlife habitat due to the construction and inundation of lands on the Spokane Indian Reservation caused by the construction of Grand Coulee Dam. The Spokane Tribe has since purchased 1704.5 acres through this process and had allocated funds from another fund to purchase an additional 129 acres. In the process the Spokane Tribe has also dedicated 36 of Tribal Land in the Blue Creek Breaks for Wildlife protection and enhancements. The Total Acreage is now at 1863.5.

ISRP Comment/Question: The benefits of the project are not given in biological terms that relate to the target species listed in the initial part of the proposal. Habitat Units do not say much about direct benefits to whitetail deer, mule deer, yellow warbler, etc. Further, Habitat Units are not described nor are the HEP models used to obtain the units.

Response: The ISRP made a comment about direct benefits to the Target Species in the proposal. Any purchase of lands where livestock grazing in terminated (on Wildlife Lands on the Spokane Reservation) will provide a major benefit to wildlife by excluding competition for vegetation. Habitat Units were a method developed by an Agency other than the Spokane Wildlife Program as an accounting method to determine value to wildlife through Habitat Evaluation Procedures (HEP) and these would be credited to BPA.

The Wildlife Program has since completed the Habitat Evaluation Procedures, the Management Plan, (general plan, and site specific), and the HEP Report. The Management Plan was submitted to Bonneville Power Administration in April 1999.
The HEP Report is in the final stages of completion and should be submitted to BPA in early July 1999.

The HEP results will be used to better determine what measures of habitat enhancements are needed on each parcel. The benefit will not only be for the TARGET SPECIES that were identified for Grand Coulee Dam losses (White-tail deer, Mule Deer, Sharp-tailed Grouse, Ruffed Grouse, Mourning Dove, Yellow Warbler), but all other species that are associated with that particular guild.

ISRP Comment/Question: Operation and maintenance activities should be better described.

Response: The operation and maintenance guidelines were identified in the proposal, which will be implemented on the wildlife lands on the Spokane Indian Reservation meet the guidelines set forth in the Guidelines for Enhancement, Operation, and Maintenance Activities for Wildlife Mitigation Project prepared by the CBFWA Wildlife Managers, June 1998.

ISRP Comment/Question: The budget is explicit, although support for 2.2 FTEs seems high for such a routine project.

Response: Operations on lands secured for wildlife has required staffing to complete the enhancement objectives set forth in the management plan which was completed April 1999. The request was for 2.2 FTE’s, which was deemed “high for such a routine project” (ISRP comment). There is one Full Time Employee and 2 seasonal employees, hence the 2.2 FTE’s as it was calculated. It would seem irresponsible to consider that a single employee could carry out enhancement activities.

ISRP Comment/Question: The proposal lacks detail in several important aspects. It is weak in describing restoration objectives.

Response: The Spokane Tribe has been conducting fencing for livestock exclusion, upland shrub plantings in old agriculture fields, (which only comprises a small percentage of lands purchased). Riparian area plantings are one of

the major enhancement activities conducted this year. Due to heavy livestock grazing, the project sponsor felt that taking a passive approach to management on these lands would not have a gain of any benefit to wildlife in the near future. These enhancement activities were the primary focus on Operations and Maintenance for the first year on Wildlife Lands.

ISRP Comment/Question: The baseline data and plans to monitor wildlife and vegetation parameters are inadequate.

Response: Under the Northwest Power Planning Council's Program, Habitat Evaluation Procedures (HEP), which is a tool to measure vegetation, is an acceptable management practice, and is required to be completed when a parcel of land is purchased. Baseline data of vegetation is measured and Habitat Units are calculated and habitat units are credited too Bonneville Power Administration for losses on the Spokane Indian Reservation due to loss of wildlife habitat due to Grand Coulee Dam. Post-Enhancement activities, 5 years, HEP's are to be completed again on the project and any habitat units gained from enhancement are to be credited to BPA.

The Spokane Wildlife Program is currently seeking funding from other agencies in order to be able to conduct wildlife species response to management activities. Grants are in the process of being completed to request funding in order to study the response of wildlife species to enhancement activities on lands purchased for wildlife.

**Project: 9800702 Grande Ronde Supplementation - O&M/M&E - Nez Perce Tribe Lostine**
Sponsor: Nez Perce Tribe

CBFWA tier: 1
ISRP review: Fund. The Grande Ronde supplementation program is a reasonable project and is recommended for funding. However, the program should be subject to annual review, with an in-depth evaluation of year-to-year results. This project should submit annual proposals that summarize results and interpretation through the period of initial release and return of hatchery fish. Additionally, future proposals should address comments below.

ISRP Comment/Question: The Grande Ronde supplementation program is a reasonable project and is recommended for funding. However, the program should be subject to annual review, with an in-depth evaluation of year-to-year results. This project should submit annual proposals that summarize results and interpretation through the period of initial release and return of hatchery fish. Additionally, future proposals should address comments below. This is a comprehensive proposal that incorporates a strong monitoring and evaluation component. If a supplementation program is to exist, then certainly data need to be taken on its effects and effectiveness; the data to be gathered by this project are a part of those needed data. In 1999, the first 12,000 conventional brood smolt are anticipated to be released in the study area. In 2000, the first F1 captive brood fish will be released. This proposal is to provide life-history, genetics, population, and environmental data for both wild and hatchery fish. The project also has collected baseline (pre-supplementation) data, apparently for 2 years. The fish stocks to be conserved by captive and conventional brood are in jeopardy, and attention has been given to not harvesting all wild fish for hatchery use (e.g., the discussion of a sliding scale method, which should be more thoroughly explained and discussed).

Even though many of the sections of the proposal are very well done, some of it is less than adequate. Essential information on the analytical methods is lacking. The objectives have a hypothetical underpinning, but the proposal lacks detail about how hypotheses will be tested, levels of confidence, etc. The objectives (e.g., operate fish trap, coordinate/develop GRESP, etc) are not biological goals, they simply state tasks that might address biological goals.

Response: These are constructive comments and will be incorporated into future planning for this project.

ISRP Comment/Question: The collection of habitat data is limited to temperature and discharge information at trap sites. Although smolt-to-adult survival has continued to decline, there is no apparent effort to investigate or link habitat characteristics to adult returns. The proposal does not demonstrate strong skills in quantitative analysis in the person responsible for data analysis.

Response: Referring the reviewers to Objective 7 of the proposal on page 21. The proposal states that the project sponsor will investigate temperature and discharge data and link these habitat conditions with juvenile and adult chinook in the Lostine River.

Stream temperature and discharge are extremely important habitat characteristics directly related to juvenile and adult numbers. Successful emigration and immigration is dependent, in part, on stream flows. Fish movement and survival is frequently correlated with stream discharge. Elliot (1984) related fluctuations in stream flow to fluctuations in parr densities. Many studies have shown that high flows or prolonged flooding can limit parr densities, displace fry, and inhibit spawning (Chapman and Bjornn 1969; Seegrist and Gard 1972; Hartman and Holtby 1982). Conversely, Frenette et al. (1984) found that
low flows during incubation periods were associated with low parr densities. Low flows and the resultant limited habitat effected year class strength and smolt yield in several Washington streams (Johnson 1985). Smoker (1955) has also found a correlation between commercial harvest and summer flows in western Washington. An affiliate study to the proposal determined that flows less than 40 cfs would impede adult chinook migration through the lower reaches of the Lostine River (R2 Resources Consultants 1998).

Likewise, stream temperature plays a critical role in both migration and survival. Overwinter mortality is often related with low stream temperatures (Hassinger et al. 1974; Shuter et al. 1980; Cunjak 1986; Seelbach 1987). Stress and disease can be facilitated by temperatures above tolerance limits for salmon (Fagerlund et al. 1995; Wedemeyer 1973, 1983). Temperature profiles can influence the onset of smoltification along with other environmental cues (Clarke and Hirano 1995). High temperatures can also act as a thermal block impeding adult salmon migration (Fagerlund et al. 1995).

Because of the well-documented influence of these two habitat parameters, the Nez Perce Tribe proposes to collect temperature and discharge data and correlate them with smolt and adult migration. Profiling other habitat characteristics is beyond the scope of this study due to financial and personnel limitations. However, many other BPA funded proposals depict habitat conditions in the Grande Ronde Basin and plan for improvement activities. Projects 8402500 - Grande Ronde Habitat Enhancement (ODFW), 9608300 - Grande Ronde Habitat Enhancement (CTUIR), 9402700 – Grande Ronde Model Watershed, 9403900 – Wallowa Basin Project Planning, and 9702500 Wallowa/Nez Perce Salmon Habitat are listed and described in the “Relationships to other projects” section of the proposal on page 14.

ISRP Comment/Question: The proposers appear to embrace improved hatchery technologies, but do not question the role of hatcheries in recovery efforts. [See programmatic comments on artificial production and captive broodstock.]All of the GRESP and other captive broodstock and conservation-related hatchery proposals note that there are risks in captive broodstock technology/intervention, but they seem to understate the risks. In fact, fish may be more likely to go extinct (from disease or catastrophe) in captivity than in the wild, and hatchery fish are expected to be at least somewhat domesticated, decreasing their fitness in the wild. Hatcheries are taking many actions to offset these risks, but they cannot be entirely removed. Additionally, the financial costs of captive hatchery technology are large and it is unlikely that this technology could be implemented for all of the many local stocks that are or are likely to be in danger of extinction. These programs should not be expanded without clear appreciation of their risk, of the temporary nature of their value. A general problem of the GRESP is that (as most proposals acknowledge) smolt to adult survival must be increased greatly for GRESP to be effective in restoring fish. Thus, these proposals tend to treat symptoms, not the root problem.

Response: The ISRP reviewers insinuate that the project proponents do not consider the inherent risks associated with supplementation. Yet the proposal does acknowledges the potential hazards and uncertainty of supplementation programs on pages 12 and 22. The proposal further acknowledges the risks by citing the work of Cuenco et al. (1993) and Waples (1995). These potential risks are precisely why the Nez Perce Tribe insists on coupling its supplementation programs with monitoring and evaluation efforts. Indeed, the reviewers themselves concede that the proposal “incorporates a strong monitoring and evaluation component.”

Although supplementation continues to be a controversial recovery tool, it has been used with varying degrees of success to enhance fish runs, restore naturally spawning populations, and to conserve endangered species. The decision to use supplementation in the Grande Ronde Basin was obviously made in the midst of considerable uncertainty. But one of the basic dictums of conservation biology states that in a crisis, as in the Grande Ronde, acting before knowing all the facts is a must (Soulé 1995).

Knowing that supplementation efforts have led to the persistence of the Imnaha River spring chinook population after decades of precipitous decline prior to hatchery intervention. No genetic change in the population has been detected (Carmichael et al. 1998). Steelhead supplementation in the Coquihalla River, BC using wild broodstock led to a fourfold increase of parr at index sites (Ptolemy 1986). Conservation aquaculture has been key in the recovery process for the Kootenai River white sturgeon population (Anders 1998). Chinook supplementation in the Sandy River, Oregon doubled the naturally spawning population in ten years (ODFW 1996). British Columbia's Salmonid Enhancement Program, which uses wild broodstock, has made documented progress in increasing run size in its supplemented streams (Miller 1990). Since 1977, the Warm Springs National Fish Hatchery has provided spring chinook production for sport and tribal fisheries while not adversely affecting wild stock production (Olsen et al. 1995).

Also knowing that locally adapted hatchery smolts perform better than hatchery smolts from distant stocks (Reisenbichler 1988), successful outplanting of hatchery fish depends on the hatchery's ability to produce fish qualitatively similar to natural fish (Lichatowich and McIntyre 1987), genetic fitness decreases as differences between hatchery and wild fish increase (Chilcote et al. 1986), and the production of wild stocks can be reduced after the introduction of poorly adapted fish (Vincent 1987).

Nonetheless, geneticists recognize that natural recovery options are largely ineffective when populations decline below a certain threshold size. The deleterious effects of inbreeding depression, reduced gene flow, and genetic drift are compounded in a dwindling population. The rate at which genetic variability is lost is directly proportional to the effective population size. Therefore, the rate of loss increases as the population size decreases (Kincaid 1998). When the effective population size of a fish stock remains low through time extinction is inevitable (Lacy 1987). Thus maintaining a large effective population size is critical for population viability and persistence.

Many consider supplementation to be, at best, an impecunious option for conserving fish populations. However, some now feel that "hatcheries are being managed with a greater awareness of salmonid breeding structure and of the need to ensure that hatchery-produced fish are integrated into the ecosystem in ways that minimize impacts on wild populations" (Lichatowich and McIntyre 1987). In light of the above, the project sponsor believes supplementation to be a superior alternative to letting "nature take its course" when the natural environment is no longer able to maintain an effective population size and the stock faces demographic jeopardy. Finally, the project sponsor hopes that anxiety over the risks of supplementation will not hinder the prudent management of Grande Ronde stocks of spring chinook salmon.

ISRP Comment/Question: Objective 3 - Why would migration not be impeded by a weir (so, what will be monitored?). The same applied to steelhead and bull trout, unless they are small enough to pass through the pickets, but Objective 4 anticipates capturing both species.

Response: For the very reason that weirs can impede migration, they clearly warrant close scrutiny and monitoring. Weirs are an efficient method for capturing salmonids and can be used to gather data on migration timing, age structure, length-at-maturity, sex ratio, and to estimate escapement and calibrate redd counts (Whelan et al. 1989, Messmer et al. 1992, Rich et al. 1993). Thus, the Tribe recognizes the weir as an important evaluation tool for research in the Lostine River. And the Lostine weir is specifically designed to be fish friendly. National Marine Fisheries Service criteria for weir and trap facilities were followed in the development of the Lostine weir (NMFS 1993). Adult fish are led by the fence to the trap. Trapped fish are then allowed to pass or kept for broodstock. The vertical pickets are spaced to allow juvenile fish passage.

However, a weir can adversely impact adult migration of target and non-target species (Clay 1995). Therefore, to evaluate the effect of the weir, monitoring its operation occurs whenever it is closed and fishing. Visual stream bank and discreet snorkel surveys are used to observe and note fish location and densities relative to the weir. If fish densities above and below the weir are different, then migration may be inhibited. For example, this spring, numerous steelhead kelts were observed upstream of the weir. These fish were eventually passed downstream below the weir. Bull trout moving upstream have been captured in the trap. They were sampled, passed above the weir and allowed to continue upstream. Another example of monitoring and adaptively managing the weir occurred when large numbers of post-spawn largescale suckers were noted by surveyors immediately above the weir. It was apparent that these fish were hindered from further downstream movement by the weir. Pickets were therefore pulled and the suckers seined through the weir.

Surveyors also look for chinook spawning activity. More redds below the weir than above may imply that the weir has displaced chinook spawning. Because of these potential impacts, monitoring of our weir coincides with its operation.

ISRP Comment/Question: In the Abstract they say that the first artificially produced chinook will be released in 1999. But in the Methods, they say they will determine hatchery to wild fish ratios. Doesn't this imply that there already has been supplementation?

Response: The first release of hatchery smolts in the Lostine River occurred in April, 1999. However, hatchery plants of spring chinook have occurred in the Grande Ronde Basin every year since the 1970s. Carson River, Rapid River and Willamette River stocks have all been used to supplement the Grande Ronde Basin. Numbers of smolts released range from 350,000 to 2,750,000 (Carmicael et al. 1998).

The proportion of spawners in the Lostine River from hatchery strays prior to supplementation was found to be high. From 1986 to 1994, the proportion of strays ranged from 23% to 56.3% (Flesher ODFW). It is therefore prudent to monitor stray rates and determine hatchery/wild proportions even before the return of the Lostine River hatchery fish released in 1999.

ISRP Comment/Question: Objective 4 - They plan to monitor genetic and life history diversity prior to supplementation, and in the Abstract they say that the first artificially produced chinook will be released in 1999. But in the methods they say that they will determine hatchery to wild fish ratios. Doesn't this imply that there already has been supplementation? They say they will collect and analyze baseline information, but in the methods section, all they say is what information they will collect - nothing is said about how the data will be analyzed. Thus, it is hard to know on what basis they will reject or support their hypotheses.

Response: The Grande Ronde supplementation project may be viewed as a manipulative research experiment to determine whether natural populations can be augmented by introductions of acclimated, locally adapted hatchery fish. It is through life history traits and genetic variability that salmon populations are able to exploit unique habitats (Gross 1985). Therefore, the Nez Perce Tribe will monitor characteristics in the wild population prior to supplementation and use them as performance standards against which hatchery fish will be compared. Accurate estimates of abundance are also needed to assess the effectiveness of supplementation. As the proposal affirms, the collected data will be analyzed to determine and compare escapement, fish per redd, run timing, hatchery/wild proportions, sex ratios, age composition and structure, age-at-maturity, length-at-maturity, juvenile size and growth, smolt survival and the influence of smolt size on survival.

Hence, with the data collected and analyzed, the hypotheses listed in the "Proposal objective" section can be addressed and tested. Given the limited allotted space the project sponsor is able to provide the detailed description of methods requested by the ISRP.

ISRP Comment/Question: Objective 6 - similar problem. How are they actually going to determine smolt survival and influence of size on survival? There is no information beyond the statement that it will be done. Unfortunately, this is not very helpful.

Response: As stated on pages 6, 20, and 21 of the proposal, smolt survival will be determined with Program SURPH.1. The model is a statistical survival analysis package used in fish and wildlife tagging studies. It was designed to analyze release-recapture data for survival estimates (Skalski et al. 1994). For the purpose of this study, SURPH methodology is combined with PIT-tag technology to help quantify survival relationships through the Columbia River Basin.

Wild and/or hatchery juveniles from the Lostine River are PIT-tagged, released and potentially detected at multiple dams as they migrate to the ocean. PIT-tag interrogation data is retrieved from the PTAGIS database and processed for SURPH through the program called CAPHIST. CAPHIST was designed by the University of Washington to arrange "comma separated values" (CSV) lists obtained from PTAGIS into SURPH data files. The result is the collection of capture data that can be analyzed to estimate survival and covariates that might influence survival (Smith et al. 1994). As researchers, there might be an interest in how survival rates differ among populations or

treatment groups, or how survival probabilities at a particular site change over time. Thus, the influence of smolt size on survival can also be determined.

**Project: 9800703 Facility O&M And Program M&E For Grande Ronde Spring Chinook Salmon**
Sponsor: Confederated Tribes of the Umatilla Indian Reservation

CBFWA tier: 1
ISRP review: Delay funding until the sponsors provide detail on the data collection and statistical methods to analyze the data. Also, the travel budget needs to be reviewed and justified before funding. As noted for 9800702, the proposers need to report annually on their results.

ISRP Comment/Question: Travel budget needs to be reviewed and justified.

Response: Unlike other agencies, where a budget for planning and administration are requested in multiple projects (NPT: 8805301, 9702500, 9800702, 9801006; ODFW 8805305, 9801001), this CTUIR project covers for all aspects of the conventional and captive portions of the chinook recovery program for the Grande Ronde River. In addition, extensive travel under this proposal is required for operation of two adult and two acclimation facilities that are at remote locations with facilities that are not self-contained. Because the project sponsor is working with endangered species, and has made the decision that all handling, injections, tagging, etc. of fish will be under the supervision of a biologist. Therefore, travel every day those adults are captured at the weir will be required.

ISRP Comment/Question: The hypotheses are numerous and provide a framework for evaluating aspects of the project, however, there is no explanation of how these hypotheses will be tested. For instance, what statistical tests will be used to determine if sample sizes are adequate, which tests will be used to do the comparisons, and what will be the basis for rejecting hypotheses.

Response: The hypotheses are numerous and provide a framework for evaluating aspects of the project, however, there is no explanation of how these hypotheses will be tested.
As stated in the project proposal, this project is part of an integrated conservation program for spring chinook salmon in the Grande Ronde River. As such, personnel for this project cooperate in monitoring and evaluations that are developed, executed, and reported cooperatively. The project sponsor provided a brief overview of hypotheses being tested in the proposal. Detailed explanations to address the inadequacies of the experimental design indicated by the reviewer were apparently adequately addressed in the ODFW captive brood proposal (9801001) which received a “fund” recommendation.

ISRP Comment/Question: Experimental methods also are vague. For instance, why feed maintenance rations rather than growth rations?

Response: The project sponsor will feed the percent body weight that is appropriate for the temperature regime. Preliminary temperature data suggest that the temperatures that are likely to be encountered during acclimation will probably be so low that growth is unlikely to occur, hence “maintenance rations” are the likely feeding rates.

ISRP Comment/Question: Effluent will be tested, but how and for what?

Response: This is not an experimental method. Monitoring of effluent on a regular basis (e.g., for dissolved solids) is required for DEQ requirements of all fish propagation facilities.

ISRP Comment/Question: How will effects of weirs on migration be estimated?

Response: As indicated in task 3e, the one-mile sections below the weir will be walked. These will be compared to captures in the trap. Indications thus far from these surveys and from direct (but incidental) observations of a few fish that were observed encountering the weir, were that fish spend little time immediately below the weir, and are likely to be captured within a short time of encountering the structure.

ISRP Comment/Question: The sampling design for spawning ground surveys is not given: is it to be a complete survey or a stratified design? If stratified, how?

Response: These surveys are a cooperative effort among co-management tribal, state and federal agencies in the basin. They are funded from multiple sources. Personnel time allotted under this project are designed to provide a more comprehensive effort than has been achieved in the past. Design and oversight by co-managers occurs under other funding sources.

Surveys are conducted in all major chinook salmon spawning areas during index surveys (a single date). At least 2-3 follow-up surveys are conducted in the areas where the largest proportion of the spawning population has been observed to provide an index of the spawning population. By the last survey date, few live fish are generally observed. In those rare instances where a large proportion of the fish observed are live and appear not to have spawned, an additional survey is usually conducted. The survey results are considered a relatively comprehensive estimate of the spawning populations in supplemented and unsupplemented Grande Ronde River tributaries.

ISRP Comment/Question: How will stream temperature and flow be monitored?

Response: Temperature will be monitored with electronic thermographs. Working with other tribal, state and federal co-managers to determine if a cost-share is available to establish gaging stations for flow estimates in areas in the vicinity of the chinook populations. In the mean time, staff gages that have been installed at the sites to index flows are being used.

ISRP Comment/Question: Adaptive management is integrated among the program co-managers, but the proposal lacks information on how the knowledge gained from monitoring will be used to adjust and improve operations.

Response: This project is part of a comprehensive program that has a large list of variables that are being measured, reviewed and evaluated with the intent to incorporate relevant changes into the program. Co-manager forums (e.g., the spring chinook program Technical Oversight Committee, Lower Snake River Compensation Plan's Annual Operation Plan, etc.) will be used to address integration of specific recommendations as a result of new knowledge.

ISRP Comment/Question: The proposers should closely review the other supplementation projects that they acknowledge are not successful.

Response: This is a conservation program. As such, supplementation provides what co-managers consider the best alternative to prevent extinction of the populations in which they consider vital portions of the ESU. Tribal, state and federal co-managers and NMFS reviewed both successful and unsuccessful supplementation efforts and (the NMFS has agreed that), given the small population sizes of the targeted tributaries, the most probable technique to prevent functional extinction in the short term is a hatchery program. The Council apparently agrees with the conservation/supplementation effort, because the captive brood propagation proposal (9801001) and the conventional project for the Lostine River (9800702 - which is essentially the same activities as this proposal, but in the Lostine River) were recommended for funding.

ISRP Comment/Question: The proposal suggests some problems of coordination that should be improved. First, to which umbrella does this project belong? The proposal says 20556, but 20556 does not list this proposal, while 20531 does.

Response: In proposal 20556, project 980701 was a misprint, and should have been 980703 (980701 is capital construction which was scheduled to have been completed by FY2000).

ISRP Comment/Question: Also, both this project and 9800702 take responsibility for capturing the 27 adult fish from the Lostine River in 1997.

Response: In order to give the reader a better overview of the project as part of an overall, integrated program, "program" activities were noted. These fish were collected by NPT under project 980702.

ISRP Comment/Question: Also, the proposal mentions bull trout and steelhead in passing. Isn't there more of an opportunity to do something useful with these species as part of a project like this. For instance, how many get captured in the weirs; what kinds of information might be obtained from them; what of possibilities for collaboration with others working specifically on bull trout and steelhead? There should be a coordinated effort to standardize the collection of data across species.

Response: Collection of data for both bull trout and steelhead are being coordinated. As noted several places in the proposal, this project depends upon funding of the bull trout study. Both CTUIR and NPT have coordinated with personnel from the bull trout project, and are collecting the requested data at all weirs.

Because objectives for the bull trout study are different from management questions for steelhead, data being collected on steelhead (kelts) are different from bull trout. Data collection for steelhead has already been standardized.

ISRP Comment/Question: This and other related proposals acknowledge that threats to adult survival, particularly habitat and passage, must be solved for the broodstock programs to be a successful conservation or recovery strategy. To fund these hatcheries without concomitant emphasis of solving the root problems seems financially foolish and futile.

Response: The project sponsor agrees with the first sentence. The last sentence is the opinion of the reviewer, rather than a statement of fact, based on sound science and prudent management decisions. Co-managers and NMFS disagree with the reviewer. Using this strategy, numerous stocks of fish, particularly in the Snake River basin, would go extinct before changes were made. Having tried this "wait-and-see" strategy, and having allowed this greatly reduced the genetic variability in the basin while the project sponsor attended to reach "doubling goals" in the past.

The captive brood component of the Grande Ronde Spring Chinook Salmon Program addresses NPPC Program Measures: 7.1B Conserve Genetic Diversity; 7.2 Improve Existing Hatchery Production; 7.2D Improve Propagation at Existing Facilities; 7.3B Implement High Priority Supplementation Projects; 7.4A,D,D2 Implement Captive Broodstock. Captive brood is supported by the Biological Opinion for Hatchery Actions, The Snake River Salmon Recovery Team (SRSRT 1994), NMFS Draft Recovery Plan (NMFS 1995), an Independent Scientific Review Panel which reviewed options for the spring chinook salmon populations in the Grande Ronde River (Currens et al. 1996) and the Scientific Review Team, which reviewed salmonid artificial production for the Columbia River (SRT 1999).

ISRP Comment/Question: The reliance on captive broodstock to preserve ESU's can be regarded only as a short-term and temporary solution to the threat of extinction of these salmon stocks. Captive broodstock programs offer many risks, including domestication, poor breeding success or survival, and increased disease sensitivity. The approach also is costly and is probably intractable as a tool for preserving all Basin ESU's.

Response: Co-managers acknowledge the risks, and disagree with the reviewer's opinion that captive brood is intractable as a recovery tool. The project sponsor agrees with the reviewer that it can not be used to preserve all ESU's. Co-managers only chose to pursue this approach for "core" populations in the Grande Ronde basin where populations were in imminent risk of extinction (e.g., Wenaha and Minam populations are not currently targeted for supplementation).

ISRP Comment/Question: It would be hard to imagine a species with a more complicated life history, one more difficult to replicate in culture, than those of anadromous Pacific salmon. To retain these animals in culture is likely to alter selective pressures and to lose some of the coadapted genomes of wild fish, no matter how much hatcheries become more natural.

Response: The project sponsor agrees with the risks the reviewer poses, but feel the threat of extinction poses a greater reduction in genetic diversity than that posed by a hatchery program.

ISRP Comment/Question: It is quite possible that small wild populations are more viable in the wild than they would be as captive brood taken from the wild. Recent studies and reviews in conservation biology are recommending that captive broodstock be a last-resort strategy and that they follow only after careful field studies

and a determination that preferable alternatives are not available and that captive breeding is necessary for short-term survival.

Response: Although the project sponsor acknowledges the possibilities, the project sponsor operates on the probabilities. Co-managers agree that this is a last resort, and have only made the choice after a long, thoughtful analysis of the alternatives. The project sponsor agrees that the program is envisioned as a short-term alternative. The captive program is scheduled to be reduced as the probability of extinction decreases (naturally reproducing population size increases).

References:

Currens, K., J. Lannan, B. Riddell, D. Tave, and C. Wood. 1996. Responses of the independent scientific panel to questions about the interpretation of genetic data for spring chinook salon in the grande ronde basin. U.S. v. Oregon Dispute Resolution, 1996.

NMFS. 1995. Proposed recovery plan for Snake River salmon. U.S. Dept. of Commerce, NOAA. Portland, OR.

Scientific Review Team (SRT). 1999. Review of salmonid artificial production in the Columbia River basin as a scientific basis for Columbia River production program. Northwest Power Planning Council. Portland, OR.

Snake River Salmon Recovery Team (SRSRT). 1994. Final recommendations to the National Marine Fisheries Service. Portland, OR.

**Project: 9800800 Regional Forum Facilitation Services**
Sponsor: DS Consulting

CBFWA tier: 1
ISRP review: Do not fund. Include facilitation in specific activities as needed.

ISRP Comment/Question: We have difficulty seeing why facilitation services are needed for routine activities and coordination of meetings. The proposal fails to establish why such services are necessary.

Response: The Regional Forum was established to discuss, debate, and resolve issues relative to implementation of the 1995 Biological Opinion on hydro operations. This includes the real time operations at Columbia River hydro facilities aimed at improving migration survival as well as the development of needs and priorities for facility improvements at Columbia River dams. The regional Forum is broadly constituted of state, tribal, and federal fish and wildlife co-managers and Columbia River operating entities (Corps of Engineers, Bonneville Power Administration, Bureau of Reclamation and Mid-Columbia PUD's). Other stakeholders frequently attend regularly scheduled meetings of the various teams of the Regional forum and are allowed to actively participate.

Because of the diversity of interests that are at the table and the substantial power and economic costs associated with operations and facility improvements, disagreement regarding certain operations or priorities frequently arise. The Regional Forum process operates on consensus and allows for unresolved issues to be elevated from the technical teams (Technical Management Team, System Configuration Team, Water Quality Team) to the Implementation Team (Programmatic level) and, if necessary, to the Executive Committee (policy level). However, the intent is to resolve issues at the lowest level possible.

Forum members expressed concerns about the role of the Chairs, meeting management, ability to be heard, and clear and objective characterization of issues. In response, it was agreed that having the meetings facilitated by a professional who is neutral to the issues and skilled in meeting management and consensus-building techniques would be tried in FY 98 on a pilot basis. Following lengthy discussion, the members agreed that all meetings of the Regional Forum and its teams would be facilitated unless consensus agreement was reached that a particular meeting of their group, in general, did not warrant facilitation. Because of the immediate improvement in meeting conduct and issue resolution, there have been few instances in which a team has elected to waive~~d~~ facilitation.

Prior to submission of the FY2000 Facilitation Services proposal to the BPA, discussions were held with technical team chairs, and Implementation Team members regarding the need and desire to continue with these services. The consensus response was that there had been substantial improvements in the process and that facilitation should continue within the Regional Forum. A letter of confirmation of this position from the Implementation Team will be provided directly to the Council.

ISRP Comment/Question: The task does not have that much to do with the Fish and Wildlife Program. We question whether BPA should be a funding source for this purpose.

Response: This comment is difficult to understand. The Power Planning Council's Fish and Wildlife Program (Program) is replete with operational and structural measures aimed at improving juvenile and adult migration survival in the mainstem Columbia River. The Biological Opinions of the NMFS and FWS on salmon and sturgeon affected by the operation of the Federal Columbia River Power System, likewise include a wide range of operational and funding measures necessary for the conservation of listed species. The cost cap MOA among the Federal agencies recognizes this link. In discussing BPA's direct program costs, it notes that these expenditures are "based on measures in the Biological Opinions and the Council's Fish and Wildlife Program." The Program does not reference the Regional Forum (the Program predates the Forum) or specifically require facilitation services. However, the Regional Forum process is one of the forums in which the Council's Program measures and Biological Opinion requirements are brought together for fine-tuning, discussion, and implementation. The Forum is dedicated to achieving those objectives in the most efficient way possible while working collaboratively with fish and wildlife co-managers, states, operating entities, the Council, and the public.

The services provided by the facilitator enhance the ability to come to resolution on numerous measures contained in the Council's fish and wildlife program. Facilitation has proved to be a positive and necessary element of that process. Accordingly, it is an appropriate administrative cost associated with achieving the purposes of the Fish and Wildlife Program and is therefore appropriate for funding by BPA.

**Project: 9801001 Grande Ronde Basin Spring Chinook Captive Broodstock Program**
Sponsor: Oregon Department of Fish and Wildlife

CBFWA tier: 1
ISRP review: Fund. See proposals 9800702, 9800703 and 9801006.

ISRP Comment/Question: The objectives listed on page 16 are more tasks than objectives; the objectives listed in the abstract are better. The project would be strengthened by more direct reference to these objectives and the desired outcomes they represent, rather than to "process."

Response: Two sets of objectives are listed on page 16, long-term and measurable annual objectives. The objectives described in the abstract are stated on page 16 as the long-term objectives of the captive broodstock program. The technical and scientific background section describes specific outcomes anticipated from the project and how the outcomes relate to accomplishment of the objectives. In addition, the methods section describes in detail the approach to achieving the outcomes and objectives.

ISRP Comment/Question: The methods are reasonable, but statistical protocols are not given.

Response: The primary statistical approaches include analysis of variance and regression analysis.

ISRP Comment/Question: In addition, the ISRP noted that the reliance on captive broodstock to preserve stock can be regarded only as a short-term and temporary solution to the threat of extinction of these salmon stocks. Captive broodstock programs offer many threats, including domestication, poor breeding success or survival, increased disease sensitivity. It also is extremely costly and seems intractable as a tool for preserving all Basin strains. It would be hard to imagine a species with a more complicated life history, one more difficult to replicate in culture, than those of anadromous Pacific salmon. To retain these animals in culture is likely to alter selective pressures and to lose some of the coadapted genomes of wild fish, no matter how much hatcheries become more natural. It is quite possible that small wild populations are more viable in the wild than they would be as captive brood taken from the

wild. Recent studies and reviews in conservation biology are recommending that captive broodstock be a last-resort strategy and that they follow only after careful field studies and a determination that preferable alternatives are not available and that captive breeding is necessary for short-term survival. Even though the proposal acknowledges that threats to adult survival, particularly habitat and passage, must be solved for the broodstock programs to be successful conservation or mitigation tools, to fund these captive broodstock programs without concomitant emphasis on solving the root problems seems financially foolish and futile

Response: Reliance on captive broodstock to preserve stocks can be regarded only as a short-term solution and this has been stated in the background section of the proposal. Captive broodstock programs offer many threats, including domestication, poor breeding success or survival, and increased disease sensitivity. This program has been designed in an attempt to minimize these threats. The monitoring and evaluation includes assessment in all of these areas to measure the degree of threat and impact. It is not possible, nor would it be wise to attempt, to preserve all basin stocks via captive brood. A subset of the Grande Ronde stocks has been chosen to test captive brood as a management alternative. Captive brood is a last resort approach and the current assessment indicates that the Basin is in a situation where last resort approaches are needed to preserve these important populations. Passage problems must be solved to recover these populations and it would be foolish to fund captive broodstock programs without concomitant emphasis on solving the root problems. The Columbia River Basin Fish and Wildlife managers are committed to solving the root problems and see that the investment in captive broodstocks is a wise investment.

**Project: 9801003 Spawning distribution of Snake River Fall Chinook Salmon**
Sponsor: U.S. Fish and Wildlife Service

CBFWA tier: 1
ISRP review: Fund in part for one year, at previous year's level. Future potential for a multi-year review cycle, but better description/interpretation of significance of past results, and long-term future strategy, would be required.

ISRP Comment/Question: This proposal is for year 4 (possibly 3 – this is confusing in the proposal) of a five-year project to evaluate a strategy for releasing yearling fall chinook salmon from Lyons Ferry Hatchery at three sites upriver of Lower Granite Dam, with the intent of enhancing natural production in the relevant reaches.

Response: Regretfully there were inconsistencies in the completion dates specified in the proposal. The project is scheduled to be completed in FY 2002. FY 2000 will be the fourth year of data collection (third year using BPA funds). The funding projection for FY 2002 (approximately $75,000) was unintentionally omitted.

ISRP Comment/Question: The proposal lacks a good summary of the work performed to date. Reviewers are concerned about the minimal effort being expended on dissemination of results.

Response: When the FY 2000 proposal was submitted, data were being collected on the first group of returning adult fish (our primary target group), and thus there was little data to summarize. Summaries of work will be expanded in future proposals.

ISRP Comment/Question: The budget in general appears to be appropriate for the scale of the project, however it is not clear why the large increase ($182k vs $125k) for FY 2000 vs FY 1999 is needed.

Response: This project had a budget shortfall of about $30,000 in FY 1998 and FY 1999. The budget was adjusted for the FY 2000 budget by $22,388 in personnel, $3,400 in supplies and materials, and $3,902 in operations and maintenance. This resulted in a $9,745 increase in fringe benefits, and $16,481 increase in indirect cost. There was also a $700 increase in subcontractor fees, and $530 increase in lodging fees. The initial FY 2000 budget request ($182,666) was decreased by $5,000 when an anticipated increase in the helicopter rental rate was canceled. The CBFWA funding recommendation of $177,666 is necessary for carrying out this project.

**Project: 9801004 M&E Of Yearling Snake R. Fall Chinook Released Upstream Of Lower Granite**
Sponsor: Nez Perce Tribal Fisheries/Watershed Program

CBFWA tier: 1
ISRP review: Fund for one year. Subsequent funding contingent on a proposal that addresses the deficiencies noted in the panel summary.

ISRP Comment/Question: Subsequent funding contingent on a proposal that addresses the deficiencies noted in the panel summary. This is a proposal for monitoring and evaluation of Lyons Ferry Hatchery fall chinook released above Lower Granite Dam., Monitoring and evaluation of supplementation efforts is laudable, but it is difficult to determine how this project fits with others under the same umbrella (20541), which includes many other M&E efforts in the Lower Snake. A map in the umbrella proposal indicating where all the projects are taking place, and how they fit together with this one would be helpful.

Response: A map will be included in future proposals to assist those unfamiliar with the project area. The project sponsor is a little confused by the comments of the reviewers that the umbrella proposal was not clear. The Non-watershed Project Technical Evaluation comments (CBFWA, February 11, 1999) states: " well done for an umbrella document. This one really explains the relationship of all projects and the rationale for the overall goals."

ISRP Comment/Question: This proposal is for the third (perhaps fourth) year of an expensive project; even so reviewers have misgivings about the project's methods. A key element is to radiotag yearlings, but no evidence is provided that they are capable of carrying the tags without affecting survival and/or behavior; the panel was skeptical that this would be feasible.

Response: The project sponsor tends to share in the panel's skepticism that survival and behavior of yearlings carrying radio tags is unaffected. The technology for producing radio tags small enough to be used in small fish is relatively new. However, radio tagging has been an accepted method of determining migration and spawning behavior in adult steelhead and chinook salmon in the Snake river basin for a number of years. BPA project 9102900 has been successfully using radio tags to collect yearling fall chinook migration data for several years now and appear to be quite confident in the validity of their data. While not much evidence is available to show the degree to which carrying a radio tag effects fish of this size, several projects, including this one, have collected data over the past several years which has made us confident in the validity of the data and will continue to help us determine what effects radio tags have on yearling fall chinook behavior and survival.

While it is practically impossible to compare radio tagged with unmarked fish, it is possible, at least, to do some comparison with PIT tagged fish which is seemingly a much less invasive tagging method. Having observed detection rates of radio tagged yearlings consistently over 70% at Lower Granite Dam after release from the acclimation facilities. In addition, migration rates of radio tagged yearlings appear to be similar to migration rates of PIT tagged yearlings from release to Lower Granite Dam. One of the primary goals with radio tagging is to try and determine differences in migrational patterns in free flowing and impounded reaches (Lower Granite Reservoir). PIT tags are insufficient to collect this type of data.

ISRP Comment/Question: What percentage of PIT-tagged fish are expected to provide (or have provided) useable data?

Response: Actually all PIT tagged fish provide usable data. Whether or not a fish is interrogated after release is not the only measure of usable data. Biological (length, weight, condition, etc.) and tag retention (CWT and VI) data are collected from PIT tagged fish during tagging operations just prior to release. This data is valuable to assess growth, health, and tag retention for hatchery and acclimation facility operations as well as adult collection data from Lyons Ferry Hatchery, Lower Granite Dam, and naturally spawned carcasses. This pre-release biological data is also very valuable for yearling M&E to correlate with survival based on interrogation or lack thereof.

Numbers of yearlings PIT tagged in 1999 were approximately 10,000 at Big Canyon and Pittsburg Landing and 2,500 at Captain John Rapids. In addition about 78,000 surplus yearlings were acclimated and released from Big Canyon Creek after the initial groups. Of these, approximately 2,000 were PIT tagged.

ISRP Comment/Question: What is the point of elastomer tagging?

Response: The yearlings are elastomer tagged at Lyons Ferry Hatchery. Yearlings released from Lyons Ferry Hatchery, and the Big Canyon Creek, Pittsburg Landing, and Captain John Rapids Acclimation Facilities are uniquely marked with VI tags in order to differentiate as adults upon capture at Lower Granite Dam and Lyons Ferry Hatchery so that the fish may be released upstream or transported to Lyons Ferry Hatchery as appropriate.

ISRP Comment/Question: Why is assessment of VI tag retention being proposed? Other studies have shown poor VI tag retention.

Response: Data on VI tag retention is collected for WDFW quality control assessment. As the Nez Perce Tribe is responsible for operating the acclimation facilities and conducting M&E on the yearlings, the project sponsor utilizes the PIT tagging activities to collect VI tag retention information at time of release. The data is submitted to WDFW.

ISRP Comment/Question: Necessary information in the proposal is missing. For instance, Dale Kellar is named project biologist but none of his/her credentials are presented and the responsibilities of a project biologist are not described.

Response: Mr. Keller has a B.S. in Fishery Resources Management from the University of Idaho. He has 4 years experience as a Fisheries Aide with several agencies and has 2 years experience as a fisheries biologist the Nez Perce Tribe. The project sponsor questions the merit of evaluating personnel qualifications.

ISRP Comment/Question: Publications from the project are apparently nil,

Response: The 1998 annual report is currently being reviewed in-house by NPT DFRM personnel and the final version expected to be submitted by August 31. Progress on 1996 and 1997 is well underway and drafts will be submitted for review by August 31 with final versions completed in the fall of 1999. The 1999 annual report will be completed by December 31.

ISRP Comment/Question: and the education and experience of the principal project personnel are not apparently appropriate for a project of this size.

Response: What is the basis for making the determination that principal project personnel do not have appropriate experience and education for this project? There is no explanation. The Project Leader has completed Master of Science studies and support staff have Bachelor of Science degrees in Fisheries.

**Project: 9801006 Captive Broodstock Artificial Propagation**
Sponsor: Nez Perce Tribal Fisheries/Watershed Program

CBFWA tier: 1
ISRP review: Fund for one year as part of the Grande Ronde spring chinook supplementation and conservation experimental program. Subsequent funding contingent on the project actively reporting data and undergoing annual review with in-depth evaluation of year-to-year results. The proposers do not adequately address the risks inherent in captive broodstock (see comments for related proposals 20056, 9800702, 9800703).

ISRP Comment/Question: Subsequent funding contingent on the project actively reporting data and undergoing annual review with in-depth evaluation of year-to-year results. The proposers do not adequately address the risks inherent in captive broodstock (see comments for related proposals 20056, 9800702, 9800703). This is proposal associated with the spring chinook salmon supplementation program in the Grande Ronde was well written but has some shortcomings. Monitoring and evaluation are integral to the project. Proposers should carefully consider and address whether the hatchery practices would select for any particular traits, as conservation of genotypic and phenotypic variation is their goal. Also, the proposers need to show how they plan to integrate their results into future work. See comments on captive broodstock programs in programmatic section and for related proposals 20056, 9800702, 9800703.

Response: In its “Recovery Plan for Snake River Salmon,” the National Marine Fisheries Service declares captive broodstock technology to be one tool in the effort to prevent population extinction and to supplement and enhance natural chinook populations (NMFS 1995). The Northwest Power Planning Council also addresses captive brood stock studies within the Columbia River Basin Fish and Wildlife program (1994). The program acknowledges that “captive brood stock programs have the potential to rapidly increase adult fish numbers, while retaining genetic diversity of severely depleted wild or naturally spawning stocks of salmon.” The NPPC program further states that implementation of captive brood stock programs may be the most effective means of accelerating recovery of severely depleted stocks and directs program funding toward captive brood stock demonstration projects identified under the coordinated habitat and production process. In light of the above, the Nez Perce Tribe, Oregon Department of Fish and Wildlife and the Confederated Tribes of the Umatilla Indian Reservation initiated a captive broodstock program for Grande Ronde Basin spring chinook salmon.

The ISRP reviewers imply that the project proponents do not address the inherent risks associated with captive broodstock programs. Yet, on pages 7, 17 and 18 of the proposal, possible technical and theoretical problems are discussed. More specifically, the proposal states in the “Potential Risks” section:

“We acknowledge that captive broodstock technology is unproven and that uncertainty exists in terms of its application to preserve threatened chinook salmon populations. Since this program is experimental in nature, it will attempt to answer many of these uncertainties as the project progresses. Uncertainties include: maturation of adults at the correct time and age; quality of adult gametes; potential domestication effects; genetic effect to both the artificially propagated population and the wild population once captive brood adults return to spawn; and fitness of the captive brood adults.”

Although captive broodstock technology continues to be a controversial recovery tool, captive propagation of animals for endangered species restoration is a widely used method (DeBlieu 1993; Gipps 1991; Olney et al. 1994). Almost 200 animal species are currently enhanced through captive breeding techniques (Flagg and McAuley 1994). For ESA listed fish populations, captive broodstock programs are also emerging as important components in recovery efforts. Several endangered populations of Atlantic salmon, winter and spring chinook, coho, and sockeye salmon are now maintained by programs utilizing captive broodstock technology (Anders 1998; Bailey and Cinched 1989; Flagg and Manhattan 1995; Johnson and Jensen 1991). This technology holds promise as a means of accelerating recovery by maximizing the species reproductive potential. At the very least, using captive brood technology to prevent the imminent extirpation of spring chinook in the Grande Ronde Basin.

ISRP Comment/Question: However freshwater habitat and marine conditions are completely ignored as variables that influence abundance of salmon in the basin.

Response: Recognizing that habitat condition is the critical limiting factor influencing salmon abundance. Referring the reviewers to page 17 of the proposal for this acknowledgement. Indeed, it is the current limitation of habitat that necessitates such a drastic measure as captive broodstock propagation.

It is beyond the scope of this project to investigate marine conditions as a survival variable. Freshwater habitat is being addressed through numerous studies in the basin. Many other BPA funded proposals depict habitat conditions in the Grande Ronde Basin and plan for improvement activities. Projects 8402500 - Grande Ronde Habitat Enhancement (ODFW), 9608300 - Grande Ronde Habitat Enhancement (CTUIR), 9402700 – Grande Ronde Model Watershed, 9403900 – Wallowa Basin Project Planning, and 9702500 Wallowa/Nez Perce Salmon Habitat are listed and described in the “Relationships to other projects” section of the proposal on page 12.

ISRP Comment/Question: Information concerning the project history is limited to the number of fish incorporated into the captive brood stock and the amount of money spent for monitoring and evaluation, but no data were presented to summarize the results of the program and variations among the three source areas used to collect brood stock. No statistical design was provided for most of the testing of hypotheses. No criteria are provided for evaluation of the results.

Response: Please see page 3 for an outline of project history under “Past Accomplishments.” A more detailed description of the Nez Perce Tribe’s involvement in the project can be found on pages 12 & 13. Complete

participation began in 1998 when the Tribe was fully funded. In addition, 1998 represented the first year female gametes were collected and fertilized. Therefore, project history is limited. However, preliminary data that summarize results are available in the 1998 Annual Report 1998. This information was not completed at time of proposal submission. The project sponsor will attempt to include a more detailed summary of results in future proposal, however the current proposal format inhibits extensive data summary.

The project sponsor will utilize inferential statistics for hypothesis testing in which to compare treatment groups (cohorts, sex, growth regime, origins, etc.). To reject a null hypothesis by using an P = 0.05. Two-way analysis of variance (AVOVA) examines growth regime and origin effects on salmon survival, length and weight. Independent t-Tests are used to compare group means of length according to sex and cohort. Pearson Product Moment Correlation Coefficient (r) will examine the relationship between female weight and egg number. The relationship between sperm quality indices and fertilization will also be examined. Descriptive statistics such as mean length, mean weight and mean age-at-maturity and their associated variation, standard deviation, degrees of freedom, and confidence intervals are estimated using standard procedures described in Sokal and Rohlf (1981).

ISRP Comment/Question: Additionally, this proposal has activities that overlap with those under 9800702. Is there duplication? The 2 proposals should make clear the overlap, the unique and distinct contributions, and the coordination. This project (Objective 3) appears to overlap with 9800703 (Objective 3) in comparing results of treatment of groups at the various facilities. It also overlaps with 9800702 in monitoring adult migration into Lostine River.

Response: This proposal also has activities that overlap with project 9801001. The Oregon Department of Fish and Wildlife (ODFW), Confederated Tribes of the Umatilla Indian Reservation (CTUIR), and the Nez Perce Tribe (NPT) work cooperatively as patrons of the Grande Ronde Basin Captive Broodstock Program. Each agency is funded separately via individual BPA contracts that allow for participation in the program. Tasks are frequently accomplished jointly by personnel from all three agencies.

The reviewers are also correct in identifying task similarities between this proposal and proposal 9800702. These two related projects are components of the Grande Ronde Basin Endemic Spring Chinook Salmon Supplementation Program. Both projects use the Lostine River weir as an adult collection site to evaluate their respective supplementation strategies (conventional supplementation or captive broodstock).

**Project: 9801400 Ocean Survival Of Juvenile Salmonids In The Columbia River Plume**
Sponsor: National Marine Fisheries Service, Northwest Fisheries Science Center

CBFWA tier: 1
ISRP review: Fund in part for one year (or a limited period) supporting objectives 1,2, and 5; future submittal and consideration of longer term funding should address ISRP comments about objectives 3 and 4.

ISRP Comment/Question: Fund in part for one year (or a limited period) supporting objectives 1,2, and 5; future submittal and consideration of longer term funding should address ISRP comments about objectives 3 and 4.
Comments:

Response: The ISRP review recommends that Objectives 1, 2, and 5 be funded but long-term funding of Objectives 3 and 4 should first address ISRP concerns. Objectives 1 and 2 address physical and biological oceanographic features of the Columbia River plume and adjacent coastal waters of Oregon and Washington, and Objective 5 focuses on identifying the food habits of juvenile salmon captured inside or outside of the plume. Objective 3 addresses the relationship between timing of ocean entry of Columbia River juvenile salmon and oceanographic conditions (assessed in Objective 1 and 2) and Objective 4 deals with the biological characterization of juvenile salmon in the plume and adjacent coastal marine waters.

The ISRP review raises some very important issues regarding this research, but some of the specific recommendations are confusing and seemingly contradictory. For example, it is unclear why the reviewers would recommend oceanographic (biological and physical) characterization of the Columbia River plume environment but not recommend assessing important biological traits of juvenile salmon entering into and found in these same

environments. The early ocean entry period is generally agreed to be critical to juvenile salmonid survival. Objective 4 specifically addresses the sampling of juvenile salmon and the associated fish community in and outside of the plume. Further, these juveniles are the samples used to support Objective 5, which the reviewers support.

The review of this proposal by the ISRP in 1998 did not raise any objections regarding the sampling and biological characterization (growth and bioenergetic health) of juvenile salmon in and out of the plume. The proposed study continues to be, by design and necessity, a multifaceted approach to evaluate the importance of the plume. The study is designed to assess the physical and biological features of the near coastal environment (contrasting spatially the internal and external characteristics of the plume) and couple the findings with the biological traits of juvenile salmon in these differing habitats (also contrasted spatially) during a period that greatly affects their survival. The study relies on comparisons from a spatial, temporal, historical, and observational context to provide insight into the relationship between the marine environment and how habitat differences may influence salmon survival. Because this study does not hinge on any one single approach to evaluate the relationship, the ability to identify salient linkages is, by design, greatly enhanced. This is a critical feature. It makes no sense to assess the physical and biological oceanography of the plume environment without evaluating whether the environment benefits juvenile salmon (the primary target of this investigation) in a measurable way. The reviewers acknowledge that the plume may indeed be critical to survival. Questioning the benefits of objectives that highlight the links between the target species (juvenile salmon) and their habitat is as previously stated, confusing.

The concern of the reviewers appears to rely on several key misconceptions. First, the review states that there is no way to be certain of the origin of the fish sampled in this study. Secondly, and probably more importantly, the review states that there is no way to realistically determine the importance of the plume habitat to juvenile salmon. The review then contradicts this conclusion by suggesting that the way to address the issue is by tracking fish (with sonic tags) into the plume and conducting an exhaustive tagging and recapture study of fish in and out of the plume.

On the first point, the origin of fish sampled in this study can be determined. This can be and is being done through the use of coded wire tags (CWTs) and through genetic identification. Both of these approaches have been used on last year's sample to confirm that nearly 88% and 40% of the juveniles sampled in the study area were from Columbia River stocks, in June and September, respectively. Secondly, although the approach suggested by the reviewers is one way to conduct the study, it is by no means the only reasonable approach. The suggested alternative (sonic tags, mark-recapture study) is in fact an expensive way to address the problem. An approach has been adopted that is a less expensive way to develop a framework and foundation of improved understanding. The approach is to identify attributes of the habitat that may benefit the target species and then to relate these to the presence, absence, abundance, and biological traits characterizing beneficial use of prime habitats by the target species. These assessments are characterized spatially (inside and outside of the plume) and temporally (to the historical record and to future years) with respect to the target species (juvenile salmon). This approach is extensively and currently used in ecological field research and a well accepted basis for an experimental design. Although the residence time of each juvenile captured in this study is not certain, it is more likely that the majority of fish in the sample area were resident for periods exceeding days to weeks and not likely recent emigrants (arrived within the hour).

ISRP Comment/Question: It is essential to determine the migration routes, migration timing, and residence times of juvenile salmon inside the plume in order to assess the importance of the plume to growth and survival. This could be examined directly by tagging juvenile salmon at the mouth of the river with dual sonic/radio tags and following them seaward through the plume.

Response: Although determining migration route and timing of juvenile salmon could provide useful supplemental information, it is not crucial to the study. The proposed study relies on a spatial assessment of differences in characteristics of juvenile salmon relative to attributes of the coastal marine environment of interest that define potential habitat characteristics that salmon may be keying in on. The null hypothesis is that no difference in biological features of juvenile salmon will be found with respect to these attributes. If differences were found in presence, absence, abundance, or size or health characteristics of juvenile salmon with respect to habitat traits in and out of the plume, then further and more detailed evaluation would be proposed. It is important to understand that the proposed research is not only multifaceted, but also multi-stepped. Generation of new hypotheses will be proposed as information is acquired. It should be expected that from field evaluations, weight-of-evidence will guide the evaluation. It should not be expected, as inferred from the reviewers comment, that direct cause and effect

relationships will be explicitly defined in a short study period were many unknown factors may contribute to the outcome. This is contrast to a well-controlled laboratory study were by design only selected parameters are allowed to vary. A laboratory study, however, will not provide the information that is being sought in this study.

ISRP Comment/Question: Tag sufficient additional numbers of salmon (e.g. with otolith thermal marks, CWT's, PIT, or visual implant tags) in the estuary. This will ensure a reasonable chance of recovery of a sufficient numbers of these tagged fish over time as well as to assess movements and residence times. Sample juvenile salmon more intensely in time and space to try to recover more fish that have been tagged in other Columbia River programs.

Response: This represents a brute force approach, but it is not the only way to address the posed question. Although again this could provide useful information, a more prudent and reasonably balanced approach that is economically viable is as proposed. That is to characterize the physical and biological features of the plume environment and adjacent coastal marine waters, to characterize the location and several important biological traits of juvenile salmon and to evaluate relationships between them. This is a very common and standard ecological approach that the reviewers do not acknowledge. If relationships can be identified, then further evaluation may propose tagging studies to confirm the findings of the current studies.

ISRP Comment/Question: Bi-monthly sampling is not frequent enough to determine if salmon found in the plume have been there for hours, weeks or months. Additional information required to assess this (e.g. change in size with time) will also not be obtained by bi-monthly sampling.

Response: It is not clear what the reviewers meant here. Nevertheless, the focus on bimonthly sampling improperly characterizes the focus of the study. The primary intent of the design is to spatially compare juvenile salmon. It is reasonable to make the assumption the biological features of juvenile salmon sampled in different habitats (in this case in or out of the plume) will be the same. If the plume represents a unique habitat that benefits salmon survival, then the expectation is the biological characteristics of salmon in this particular habitat will be different from salmon sampled in habitats that are less beneficial. This represents the primary question that is being addressed. The samples obtained in September (the end of the growing season) are designed to validate and replicate the findings made in June (the start of the primary growing season). Recall that during this period the plume characteristics are not static but dynamic and primarily declining as Columbia River flows naturally decrease through the year. The temporal assessment that would be conducted would rely primarily on comparison to the historical record (growth of coho and chinook salmon sampled by Dr. Bill Pearcy in the 1980's) and between years in the current study. The reviewers offer no support for their contention that increase sampling will somehow enhance characterization of the amount of time that juveniles actually spend in the plume ( it is unclear how this would be achieved) and actually misrepresent the focus of the proposed study.

ISRP Comment/Question: There are some important inconsistencies in the proposal. For example, under objectives 1 and 2 only two sampling cruises are identified. However, in sections 3 and 4 three cruises sampling salmon are identified. The value of the additional cruises which will not sample salmon are questionable.

Response: As explained in the proposal, the additional sampling cruise is for juvenile salmon, not for increased characterization of the plume. The reviewers again misrepresented the stated intentions. There is a discrepancy in the cruise schedule. As explained in the proposal, the reason to increase the salmon sampling from 2 cruises, as conducted in 1998, to three cruises is to add a cruise in May when juvenile salmon are first entering the ocean environment. The catch-per-unit-effort was constant for juvenile salmon in June and September of 1998. In efforts to make relevant modifications to the proposal as information was developed, it appeared that important information and events may be taking place prior to the June sampling period. The May sampling was included to capture what appeared to be a critical time period. This explanation was presented in the proposal, but may have been missed by the reviewers. This discrepancy between characterization of the plume environment and juvenile salmon sampling will be corrected in future years. Nonetheless, the reviewers concern appears to be based on improperly characterizing the stated efforts of the proposed study.

ISRP Comment/Question: Minor weaknesses include a very confusing, though probably important, description of the difficulties of sampling along the "plume axis";

Response: This has been addressed by adopting a more generally acceptable transect approach that bisects the plume frequently. Samples in 1998 were obtained using transects perpendicular to the shore that extend offshore a minimum of 20 nautical miles. Eight transects were sampled in 1998 that ranged from Newport, OR to La Push, WA. Samples were obtained from the nearest inshore station that could be occupied, extended to 5 nautical miles and then proceeded at approximately 5 nautical mile intervals until juvenile salmon were not obtained in trawls from a minimum of two consecutive trawl sites. This approach mirrored the approach used by Dr. William Pearcy during their studies of juvenile salmon in the early 1980s and was found to intersect the plume at a high frequency level. The proposed study has reduced the transect number this year from eight to five, allowing us to increase the repetition of sites to enhance statistical confidence in the findings. This description will be revised in modifications to the proposal.

ISRP Comment/Question: weak methods description with respect to statistical analysis methods used;

Response: A section on statistical analysis was not requested in the original request for proposals. Because of space limitations, this was not provided. If the reviewers can provide specific issues of concern, they could easily be addressed.

ISRP Comment/Question: a weak section on food habits work; and a poor section on growth and "health" (as compared to other sections).

Response: Although these are comments provided by the review, they are not provided in any substantive manner that would allow the project sponsor to address the concerns of the reviewer. What constitutes weak and poor is not specified. The assessment of the biological characteristics of juvenile salmon represent one of the foundations of the proposed study, yet the review does not provide any foundation to support why this portion of the study should not be done. Do the reviewers contend that the growth and health of juvenile salmon is not linked to survival? They allude to this but provide no support for this inference. The proposed study provides a clear rationale for the biological features that are being used to assess salmon growth and health. It is inappropriate to cast wide sweeping statements of what can't be done without supportive justification. This effort is justified in lieu of substantive reviews with appropriate justification.

ISRP Comment/Question: These proponents should consider deletion of the fish health work (especially if 20052 is funded);

Response: This recommendation is confusing. The portion of Project 20052 recommended for funding only focuses on mediation of hatchery practices and has no meaning in the ecological context that is being evaluated in this proposal. In fact, the part of the study that is designed to address the importance of disease to survival in the 'real world' was not recommended for funding. It does not appear that the reviewers understood the full context of the efforts being requested in these proposals or the consequences of their recommendations as their recommendations are inappropriately aligned.

ISRP Comment/Question: and explicit incorporation of the previous predation project (97026).

Response: The relatedness of this project and the predation project were acknowledged in this proposal. Further, many of the collaborators on this proposal are participants in the predation project. It is not clear what more needs to be addressed. Also see comments to the reviews to the predation proposal.

ISRP Comment/Question: It is recommended that closer coordination and collaboration with other potential programs, which likely will be conducted simultaneously in the same area (e.g. GLOBEC, PNCERS, etc.), should be developed.

Response: This is already being achieved. Dr. Bill Peterson, who is a principal investigator on this proposal is on the GLOBEC steering committee for the upcoming NEP GLOBEC studies. He will insure appropriate coordination of studies.

ISRP Comment/Question: This is a very large program that needs an examination of the sampling design with appropriate spatial and temporal scales to determine the dynamics of the plume.

Response: This summary is inaccurate from several perspectives. As outlined above, no justification or scientific rationale is provided in the review for this position. The review is concerned with the inability to identify the source of individual fish and to confirm their residence time in or out of the plume. Based on this bias, the review proposes an approach that could alleviate this concern. The reviewers however do not acknowledge that other approaches are equally viable or better suited for this study. The approach recommended by the reviewer would be extremely costly. The experimental design does not rely on explicit knowledge of individual source of fish or residence time, as the expectation is that fish will disperse uniformly (from an experimental point of view) and that there will be no difference in fish characteristics with respect to habitat features (in or out of the plume). There is now evidence (from last years data) that juveniles are keying in on low temperature and low salinity environments (the plume) providing initial indications that the approach can provide the appropriate resolution and information. This information was not presented in the proposal because there was insufficient time (sampling was initiated in 1998) to evaluate the data prior to submission of this proposal. This finding directly contradicts the conclusion of the review.

ISRP Comment/Question: The proposed ten-year time frame to hope for adequate contrast in interannual variation has not been found to be a successful strategy.

Response: This is an over generalization that has not been satisfactorily supported. The proposed study will have yearly review and progress can be adequately tracked. The 10-year
period is simply a time frame that from experience may be needed to acquire sufficient validation of findings of field results.

ISRP Comment/Question: The monthly intervals in objective 2 are likely inadequate to achieve this objective.

Response: Again this is a sweeping statement with no justification presented. The experimental design will be evaluated on a continuing basis with the expectation that modifications be adopted as information is generated. The proposed design is adequate. If the reviewers have some explicit concerns that are document-able, their concerns could be addressed.

**Project: 9801600 Monitor Natural Escapement & Productivity Of John Day Basin Spring Chinook**
Sponsor: Oregon Department of Fish and Wildlife

CBFWA tier: 1
ISRP review: Delay funding until the survey procedures are expanded to include basin wide valid finite sampling procedures.

ISRP Comment/Question: One reviewer balked at funding for the current year because of the statement "Extensive surveys will cover all areas where spawning is believed to occur", but endorsed multi-year funding if adequate sampling plans are developed to cover potential spawning areas.

Response: Spring Chinook spawning surveys have been conducted in the John Day basin for more than forty years. The local biologists have knowledge of the potential spawning areas for spring Chinook salmon. Extensive surveys will cover all potential spawning areas, where spawning is not precluded by inadequate streamflows, excessive water temperatures, or impassable barriers. Each year, surveying outside of the current extensive survey areas as habitat conditions improve and the potential spawning areas expand. Exploratory surveys conducted by Lindsay et al. (1986) from 1978 to 1983 found 15 redds outside of the extensive survey boundaries and these accounted for less than 1% of the total redds.

ISRP Comment/Question: The sampling plan should include PIT-tagged adults returning to spawning grounds, given that PIT-tagged adults can avoid detection at mainstem dams and straying occurs.

Response: The cost of providing PIT-tag scanners to all surveyors would be prohibitive. Having concluded that adult detection data from the mainstem dams will be adequate. Carcasses could be scanned for PIT tags on spawning

surveys, but retention of tags in spawned out fish, especially females, is questionable. The project sponsor does not want to handle pre-spawning adult fish that have returned to the basin.

ISRP Comment/Question: Should not plans be expanded to include valid sampling for spawning and production of steelhead?

Response: Steelhead redds are counted by ODFW fish district biologists in slightly over 100 miles of stream. Environmental conditions are much more variable in the spring during steelhead spawning, leading too much greater uncertainty in the redd counts. Steelhead spawn over a much larger geographic and temporal ranges within the John Day basin than do spring Chinook salmon. Estimating survival of steelhead from smolt to adult is complicated by the plasticity of steelhead age at smolting. Adding steelhead to this project to get a good estimate of steelhead production in the basin would increase the costs of the project immensely.

ISRP Comment/Question: More detail is required regarding sampling methodology and calculating smolt-to-adult survival rates that would be representative for the entire watershed.

Response: Sampling methodology: smolts will be captured during the spring migration (March and April) by seining in the mainstem near Spray below the confluence of the North Fork as was done by Lindsay et al. (1986) from 1979 to 1984. Also capturing smolts at irrigation bypass traps installed and operated by ODFW in the mainstem John Day and a rotary screw trap operated by ODFW for Proposal No. 9405400 (Bull Trout In Central and N.E. Oregon). Calculating smolt-to-adult survival rates, by brood year will occur by dividing the number of PIT-tagged adults detected at mainstem dams by the number of smolts PIT-tagged for a given year.

ISRP Comment/Question: How frequently will high stream flows be expected to impact sampling and observations of smolts and adults?

Response: High flows have impacted observations of adults during spawning surveys in the John Day Basin once since 1959. High flows may impact collection of smolts for tagging during spring if there are flood events. The project sponsor will be prepared to collect smolts during normally high spring flows.

ISRP Comment/Question: Are counts of adults adequate to estimate parent-to-progeny production? What about other factors that impact success including stress, egg quality, condition index, etc.?

Response: The extensive and repeat surveys for spring Chinook redds in the basin will provide good estimates of redds. With the multiple surveys, there is the ability to sample an adequate number of carcasses for scales to determine age and assign adults to brood year. With the limited fisheries for spring Chinook salmon in the Columbia basin and limited harvest of these fish in ocean fisheries (Lindsay et al. 1986), the estimates will adequately estimate production of spring Chinook salmon in the basin. While not specifically investigating these biological factors that impact success, these factors will surely affect the parent-to-progeny production ratios that we will estimate.

ISRP Comment/Question: While this effort appears to collect and analyze aggregate data for the entire subbasin, many of the other projects apply to discrete reaches. There should be an attempt to coordinate this research with other projects and to provide useful disaggregated data to researchers on those projects.

Response: Our surveys within each sub-watershed (mainstem, Middle Fork, North Fork, and Granite Creek) within the John Day basin are divided into discrete stream sections. The redd counts are available by stream section, sub-watershed, and basin. Having coordinated the surveys with other projects to collect redd count data that will be useful to other researchers. In 1999, information was provided to other project leaders.

ISRP Comment/Question: In Objective No. 1, why is the Imnaha River to be used for estimates of fish per redd?

Response: To determine fish per redd, spawner escapement and total number of redds must be determined. One of the few places where there is ability to determine spawner escapement and total redds is in the Imnaha River. ODFW operates an adult weir on the Imnaha River to capture spring Chinook broodstock and pass adult fish to spawn above the weir. ODFW marks fish that are passed above the weir and examines all carcasses for these marks during redd surveys. Number of fish above the weir is estimated using mark-recapture techniques. Extensive and

repeat surveys are conducted on the Imnaha River to determine the number of redds above and below the weir. Estimates for the Imnaha River have been approximately 3 fish per redd. ODFW has had adequate numbers of fish and redds above the Imnaha River weir to calculate a fish-per-redd estimate.

Lindsay et al. (1986) used 3.0 fish per redd which was the average observed in the Warm Springs River above the weir at Warm Springs National Fish Hatchery from 1977-83. The Warm Springs Tribes continue to calculate a fish per redd estimate for trend purposes, but the redds counts come from index surveys and are not a complete count of the redds, and therefore having chosen not to use the Warm Springs River estimates.

Reference:

Lindsay, R. B., W. J. Knox, M.W. Flesher, B. J. Smith, E. A. Olsen, and L. S. Lutz. 1986. Study of wild spring Chinook salmon in the John Day River system. Final Report of Oregon Department of Fish and Wildlife to Bonneville Power Administration (Contract DE-A179-83BP39796), Portland, OR.

**Project: 9801700 Eliminate Gravel Push-Up Dams On Lower North Fork John Day**
Sponsor: North Fork John Day Watershed Council

CBFWA tier: 1
ISRP review: Delay funding until biological monitoring questions beyond water quality are addressed.

ISRP Comment/Question: It appears to rely heavily on the voluntary efforts of many different entities, all without assurance of their participation.

Response: This project does "rely heavily on the volunteer efforts of many different entities." The entire Oregon Plan is predicated on volunteer and interagency efforts. As a watershed council, it is our mandate to work together with landowners and agencies in both active and passive restoration efforts. The 1998 component of this project was highly successful and has helped to increase landowner participation and interest.

ISRP Comment/Question: The proposal should discuss alternatives to the construction of infiltration galleries.

Response: Infiltration galleries are only one option for elimination of push-up dams on the Lower North Fork John Day. Alternatives are proposed, designed, and installed on a site-specific basis.

ISRP Comment/Question: The project should be coordinated with Proposal No. 20077. The proposal does not indicate the level of cooperation between the North Fork John Day Watershed Council and the Bureau of Reclamation.

Response: The watershed council will increase participation with Bureau of Reclamation and investigate coordination with Proposal No. 20077. Also investigate coordination with Project No. 9801600. The North Fork John Day Watershed Council has facilitated a wide variety of projects for landowners and agencies. The project sponsor looks forward to increasing the number and diversity of the cooperators and welcome the opportunity to participate in projects sponsored by agencies within the North Fork Watershed and John Day Basin.

ISRP Comment/Question: Baseline data are needed on how many dams exist along the Lower North Fork, their locations or the identities or potential support of the affected landowners.

Response: There are over 40 pumping stations located on the lower North Fork John Day between Kimberly and the mouth of Wall Creek (a 20-mile reach). Fully one half of these pumping stations require some degree of instream flow modification during periods of low flow.

ISRP Comment/Question: How are water quality and turbidity to be monitored, how frequently, and where, above or below the pools? How many sites are to be monitored, and during what periods (e.g., during the irrigation season?)?

Response: Water temperature is monitored above and below each project site throughout the irrigation season. Turbidity is monitored monthly at each project site as well as at the upper and lower boundaries of Monument/Kimberly reach. All sites will be monitored. Data is presented to landowner. Landowners are responsible for operations and maintenance during out-years following installation.

ISRP Comment/Question: How many landowners are expected to participate?

Response: A total of 20 landowners are expected to participate throughout the four years of project. Adjacent landowners have provided volunteer labor and rock for riffraff. Again, seeing "the volunteer efforts of many entities" as a strength rather than a weakness in this proposal. Volunteers were instrumental to the success of our 1998 projects.

**Project: 9801800 John Day Watershed Restoration**
Sponsor: Confederated Tribes of the Warm Springs Reservation of Oregon

CBFWA tier: 1
ISRP review: Delay funding until specific engineering plans and monitoring efforts are presented. (low priority)

ISRP Comment/Question: This proposal provides abundant background information on John Day Watershed projects, but should include details about proposals for future work.

Response: Proposals for future activities are detailed in the Upper John Day River Basin Master Water Plan Working Paper and in the Bureau of Reclamation individual stream restoration plans for the North Fork, upper mainstem, lower and upper South Fork, and Middle Fork subbasins. All of these documents are referred to in the fiscal year (FY) 2000 project proposal. For future proposals the project sponsor will include a brief summary of future activities as outlined in these plans.

ISRP Comment/Question: The methods section is particularly abbreviated and expressed in general terms.

Response: The project sponsor disagrees. The methods are specifically described for each category of project in the Technical and/or Scientific Background—Project Features Generally subsection of the proposal. Although this discussion is not repeated in the Methods section, it is appropriately referenced. For future proposals, the discussion of methods will be moved to the appropriate section.

ISRP Comment/Question: Quantification of past benefits should be spelled out more fully.

Response: As discussed in the proposal, an annual monitoring plan is prepared prior to the field season and implemented throughout the summer and fall. A monitoring report is prepared each year that summarizes information collected and changes in resource condition, which may potentially be attributed to each project. In addition, a full-time monitoring coordinator has been hired for 1999, which will allow additional data collection related to the proposed projects. Although past realized benefits were discussed in the proposal on pages 19—21, additional discussion from the annual monitoring report(s) will be incorporated into future proposals.

ISRP Comment/Question: Projects requiring BPA funds for operation and maintenance on private lands should be reviewed carefully. Preference should be given to new projects that demonstrate a commitment from private landowners to operate and maintain capital improvements.

Response: This issue is discussed in the project proposal on page 13, under Anticipated Benefits. None of the proposed projects require funds from the BPA for operations and maintenance. Consequently, a request for these funds from the BPA has not been made. Under signed landowner agreements, which are consummated prior to construction of any improvements on private lands, the landowner commits to operating and maintaining all capital developments. Landowners cannot divert water without a diversion structure, and conveyance and application system. In most instances, only one irrigation system is present on each property. Water rights are so valuable and necessary for ranch operations that landowners do not desire to risk losing the ability to use their rights. In order for the irrigator to continue irrigating and to protect their right from non-use forfeiture, they must maintain their

irrigation system to a condition that allows them to be “ready, willing, and able” to use this right at any time. Since the proposed projects are upgrading or replacing the only irrigation system on the property, the landowner must be committed to maintain and operating the system if they desire to continue irrigating.

The combination of the signed landowner agreement and the inherent need for the landowner to maintain the project provides a sufficient assurance that the projects will be maintained into the future.

ISRP Comment/Question: Each of six objectives is accompanied by a sub-set of objectives, but the intended methodology is described only briefly.

Response: Each of the six objectives are actually followed by a description of the implementation actions, not additional resource objectives. The intended methodology is sufficiently detailed in the Project Features Generally subsection of the Technical and/or Scientific Background section. In this discussion, each type of project (e.g., infiltration gallery, permanent diversion, etc.) is extensively described as to the methods of construction and installation. In the future, the move of this discussion to the Methods section of the proposal and provide references to the discussion under the Technical and/or Scientific Background and Proposal Objectives sections, to where it may be more appropriate.

ISRP Comment/Question: The introduction and rationale are well written and comprehensive, but some quantification should be made for improvements in survival or environmental parameters as a result of altered water diversions or improved habitats.

Response: Improvements in survival are difficult to attribute to an individual project due to the relatively small scale of project activities. It is unlikely that a single, typical irrigation diversion has a significant, measurable affect on survival. Rather, it is the cumulative effect of many diversions, and associative and resultant impacts, that affect survival. These cumulative effects are difficult to assess, in particular within the scope of all the factors that affect survival of salmonids. This is especially difficult with anadromous salmon and steelhead, which are affected through various pathways during different life history stages.

Environmental parameters are being evaluated through the annual monitoring plan. Some efforts to correlate changes in the environment to changes in production/survival are being attempted. However, these conclusions are preliminary at this point. As discussed above, for future proposals, additional discussion from the annual monitoring report(s) will be included.

ISRP Comment/Question: There is some redundancy of information in the presentation.

Response: The project sponsor will review the proposal and eliminate redundancy from future requests. However, some of the duplication is due to the redundant nature of the proposal format. Where appropriate the project sponsor has simply referred to a previous discussion rather than repeat the entire description.

ISRP Comment/Question: Collection of baseline data should be included as well as monitoring for trends in use by anadromous and resident fish in areas improved by this project.

Response: This issue is discussed in the project proposal on pages 22-23, under Proposal Objectives--Implement Annual Monitoring Program. The annual monitoring plan details data collection efforts at each project, including those that have been constructed in the past as well as proposed for year 2000. Although data collection varies by site and activity, generally parameters are evaluated and monitored which respond directly to the objectives described for each project in the applicable project proposal. For the FY2000 proposal specifically, baseline data collection will serve two primary purposes: 1) establish a baseline characterization for comparison to post-project resource condition; and 2) collect information that will be used in environmental compliance efforts, in particular with regards to the Environmental Indicators and Pathways matrix proposed by the USFWS and NMFS for bulltrout and steelhead biological evaluations.

The baseline data collection and post-project evaluations includes efforts to characterize trends in use by anadromous and resident fish in project areas. These efforts use various methodologies, as outlined and described in the annual monitoring plan, such as snorkel and electrofishing surveys, redd counts, and mark—recapture studies.

ISRP Comment/Question: The claim is made that there will be extensive monitoring at each site, including fish species distribution, but more details should be provided on how this is to be accomplished.

Response: Spring Chinook distribution is characterized through a number of methods. A Forward Looking Infrared Radar study, conducted under contract with Oregon State University, has been recently concluded and evaluated the relationship between adult holding areas and stream thermal profiles. Annual redd counts are conducted by the ODFW, Tribes, and other cooperators. Snorkel and electroshocking surveys are conducted to evaluate presence/absence, distribution, community composition, and abundance. In addition, the 1999 monitoring plan proposes mark—recapture at various project locations to evaluate movement of juvenile anadromous and adult resident fish through project areas.

ISRP Comment/Question: Effectiveness of this project might be monitored in cooperation with an expanded survey in Project No. 9801600.

Response: The John Day Basin Office works closely with the ODFW in conducting the spawning ground survey portion of this project. The project sponsor is committed to contacting the principals of this project to assess the potential applicability of the remainder of their research to our activities.

ISRP Comment/Question: The cost-sharing budget includes BPA grant monies, and may not be calculated correctly.

Response: The project proposal was submitted electronically to the CBFWA using a computer form provided that automatically calculated all subtotals and totals. Since the submission of the proposal relatively early in the process, not all of the errors had been corrected in the automatic calculation portion of the program. The project sponsor was aware that the subtotals and totals were incorrect in the submitted proposal and made the CBFWA aware of the errors, the actual amounts, as well as the errors in the program. The errors were hand corrected on the “hard copy” but not the electronic copy submitted to the CBFWA. The amount requested from the BPA is $459,918 (80%) with $74,000 (13%) to be provided by local agencies, and $41,000 (7%) donated by participating landowners, for a total of $574,918.

ISRP Comment/Question: Mortality of summer steelhead related to sport fishing is assumed to be negligible. The statement appears questionable.

Response: Catch rates in the John Day are determined from incidental creel counts conducted by the Oregon State Police. Actual creel estimates are not made due to the lack of a statistically valid sampling method to determine the overall fishing effort. Studies from other basins have determined that delayed mortality due to catch and release of wild steelhead are approximately 10% (Rawding 1997 in M.W. Chilcote, 1998, Conservation status of steelhead in Oregon, ODFW, Portland, OR). A 10% mortality due to catch and release of wild fish in the John Day is assumed to be negligible (T. Unterwegner, pers. comm. 1999).

ISRP Comment/Question: More data of past monitoring for temperature and flow should be provided to demonstrate biological and cost-effectiveness of these diversion and water use strategies.

Response: Cost-effectiveness is not covered in the annual monitoring plan. However, during the preliminary planning phase for each project, various alternatives are considered for each site (e.g., permanent pumping station, infiltration gallery, permanent diversion, etc) depending upon a number of factors including cost-effectiveness (see Project Selection Background, page 13). Biological effectiveness was modeled under the water optimization study (see page 23 of proposal) and is monitored as discussed above.

ISRP Comment/Question: The proposal would benefit from expanded documentation to assure cost-effectiveness of each diversion project.

Response: It is difficult to assess the actual cost-effectiveness of each proposed project due to the schedule of implementation relative to the time that the proposal is submitted (in particular with the FY2000 proposal that was submitted two years in advance of implementation). The final engineering design drawings are not completed until signed landowner agreements have been completed. The landowner agreements are not finalized until the allocation

(and grant/contract documents) from the BPA are approved. Consequently, at the proposal stage only preliminary design drawings have been completed and these may change significantly based upon the engineering and other surveys (cultural resources, endangered species, etc.). The costs of completing these surveys prior to the proposal stage, with no reasonable reassurance of funding for implementation, are unreasonable. For future proposals, the project sponsor will provide additional discussion of cost-effectiveness of preliminary project designs. However, the BPA will have to realize that the actual implementation may differ from the initial design.

ISRP Comment/Question: Without explanation, the proposed budget is doubled from Fiscal 1999. Why?

Response: This issue is fully explained and documented on page 17 of the project proposal under Rationale and Significance to Regional Programs--Share Costs. The project proposal is not doubled from previous years, however the BPA request is doubled from past requests. As explained in the proposal, the CBFWA solicited proposals almost two years in advance of the anticipated funding period. This schedule is far in advance of our proposals for cost sharing to other agencies. Since their was no reasonable reassurance that the project sponsor would be able to secure cost-share funds from other agencies, they requested the full amount from the BPA necessary to cover all costs, excepting in-kind agency and landowner contributions. However, based on our four-year record of implementation, the project sponsor anticipates reducing BPA's total contribution to approximately 50%, the four-year average.

**Project: 9802200 Pine Creek Ranch Acquisition**
Sponsor: The Confederated Tribes of the Warm Springs Reservation of Oregon

CBFWA tier: 1
ISRP review: Delay funding until the sponsor provide evidence that the land is purchased. Review the proposal next year paying particular attention for adequacy of baseline fish and wildlife data, objectives, and methods.

ISRP Comment/Question: Delay funding until the sponsor provides evidence that the land is purchased. Review the proposal next year paying particular attention for adequacy of baseline fish and wildlife data, objectives, and methods.

Response: Based upon its status as un-acquired, it was recommended by the caucus that funding be contingent upon purchase, HEP, and management plan completion.

**Project: 9802400 Monitor Watershed Conditions On The Warm Springs Reservation**
Sponsor: The Confederated Tribes of the Warm Springs Reservation of Oregon

CBFWA tier: 1
ISRP review: Fund in part to cover culvert inventory and fish habitat survey; Do not fund macroinvertebrate and sediment components of the proposal until detailed methods are provided.

ISRP Comments/Question: There were no apparent reference sites for macroinvertebrate samples and there was no mention of biological metrics used to interpret invertebrate data (e.g., IBI, EPR, RIVPACS, etc.).

Response: The Benthic Index of Biotic Integrity for Streams in the Pacific Northwest (L.S. Fore, J.R. Karr, and R.W. Wisseman 1995) will be used for biological metrics to interpret aquatic macroinvertebrate data. Reference sites for sampling will be determined following the guidelines established in the citation listed above

ISRP Comments/Question: The author used a lot of acronyms (e.g, EDT and CIA) without explaining them or convincing the reviewers that these techniques apply well here.

Response: See page 8 and page 9 in proposal for explanation of EDT and CIA.

ISRP Comments/Question: The sediment study employed McNeil samplers, which suffer from inaccuracies compared with tri-tube freeze core methods.

Response: Freeze core sampling was considered but not chosen as many of the sampling sites are in very remote areas and transporting the tri-tube freeze core sampler to these sites would not be feasible.

ISRP Comments/Question: There was no description of fractionation methods or expression of results, e.g., percent fines, geometric mean diameter, median phi etc.

Response: Results from data collected using the McNeil sampler will be expressed as percent fines and geometric mean diameter. These two parameters will be combined to derive a quality index, Fredle Index, which provides an indicator of sediment permeability and pore size.

ISRP Comments/Question: Under Objective 1, what will the authors compare these samples to for determining least impacted streams?

Response: The Benthic Index of Biotic Integrity for Streams in the Pacific Northwest (L.S. Fore, J.R. Karr, and R.W. Wisseman 1995) will be used for biological metrics to interpret aquatic macroinvertebrate data. Reference sites for sampling will be determined following the guidelines established in the citation listed above.

ISRP Comments/Question: Under Objective 2, what will constitute a barrier?

Response: The following criteria will be used to determine if a barrier exist. These criteria follow guidelines established by the Oregon Department of Fish and Wildlife. The entrance jump shall not exceed 1.0 feet for salmon/steelhead adults or 0.5 feet for trout, kokanee adults and salmon and steelhead juveniles. Minimum water depth during low flow periods shall be 1.0 feet for adult steelhead and Chinook salmon, 0.7 feet for trout, kokanee and migrating juvenile salmon and steelhead. Maximum water velocities for salmon and steelhead, depending on culvert length, will range from 2.0 to 6.0 fps, adult trout, those greater than six inches, will range from1.0 to 4.0 fps. Juvenile salmonids shall not exceed 2.0 fps for all lengths of culverts. Gradients for non-embedded and non-baffled culverts shall not exceed 0.5%, unless it is backwatered to a sufficient length and depth within the culvert. All embedded culverts must be embedded at least 1.0 feet or 20% of its height, whichever is more.

ISRP Comments/Question: Under Objective 3, what criteria will be used to assess “quality” of spawning gravel?

Response: Results from data collected using the McNeil sampler will be expressed as percent fines and geometric mean diameter. These two parameters will be combined to derive a quality index, Fredle Index, which provides an indicator of sediment permeability and pore size. Although there are limitations to McNeil core samples, when time and money are considered, it is the most economical method to obtain estimates of channel substrate and particle size distributions.

ISRP Comments/Question: Under Objective 4, what will the habitat data be compared to (to support fish populations)?

Response: No formal stream habitat inventories have been conducted on fish bearing streams on the Warm Springs Indian Reservation. The habitat data will be used as baseline information to assess current stream habitat conditions. The results of the data will help drive fisheries and habitat management activities on the reservation.

Data derived from the stream habitat inventories will be compared to criteria developed by the National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS). These criteria are indicators of habitat quality for anadromous salmonids and bull trout and are used in making Endangered Species Act Determinations. This information can be found in “Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Watershed Scale” by the NMFS in August 1996. Also, “A Framework to Assist in Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Bull Trout Sub-population Watershed Scale” by the USFWS in February 1998. These criteria were developed out of the Deschutes Basin and therefore may not be completely applicable.

Stream habitat data may also be compared to similar basins (drainage area, land management, ecosystems, etc.) that have had stream habitat inventories completed. These streams can be on federal (U.S. Forest Service, Bureau of Land Management), State or private lands.

ISRP Comments/Question: Who are the sub-contractors?

Response: The Oregon Department of Fish & Wildlife will be the sub-contractor for the stream habitat surveys and Aquatic Biology Associates for aquatic macroinvertebrate analysis. Staff from the CTWSRO will process the McNeil core samples using the wet-sieve method that incorporates sediment volume displacement.

ISRP Comments/Question: Do they (CTWS) have criteria for selecting sub-contractors?

Response: Sub-contracts are usually awarded through a bid process unless permission is received to process as a "sole source" contract. Criteria are contract specific. This is not a scientific question.

**Project: 9802800 Trout Creek Watershed Improvement Project Multi Year Funding Proposal**
Sponsor: Jefferson County Soil & Water Conservation District

CBFWA tier: 1
ISRP review: Do not fund, technically inadequate. The authors still have not addressed shortcomings identified in FY99 ISRP review.

ISRP Comment/Question: There is insufficient detail to biologically justify this proposal. It does not appear that an adequate assessment has been performed to document the extent of the habitat problem these measures address, nor is there evidence that previous restoration efforts have produced significant improvements that directly benefit fish and wildlife.

Response: Since the submission of the project proposal, a new watershed coordinator has been hired. The coordinator has since revised and improved the project proposal. The USFS Ochoco National Forest completed a biological assessment for Forest Service land within the Trout Creek Watershed in 1995. The Confederated Tribes of Warm Spring conducted a biological assessment of the Deschutes basin, which included Trout Creek utilizing the EDT (Ecosystem Diagnostic Treatment) method. The Jefferson County Soil and Water Conservation District sponsored and published a document titled "Trout Creek Watershed Resource Inventory, Problem Assessment and Treatment Alternatives." All of these documents will aid the Trout Creek Watershed Council in compiling additional data to complete a comprehensive biological assessment of the entire Trout Creek basin with cooperation from local county, state, and federal agencies as well as private landowners.

The Trout Creek Watershed Council proposes to utilize the watershed assessment approach as a foundation in developing a long-range Watershed Improvement Plan along with a monitoring and evaluation process for the Trout Creek basin with FY 2000 funds. This plan would then identify and prioritize watershed problems before recommending any improvement actions.

The Oregon Department of Fish and Wildlife has conducted all previous restoration efforts. These restoration efforts did not include any monitoring except for stream temperatures. The proposed long-term Watershed Improvement Plan will include monitoring of all vital factors and adaptive management in response to monitoring and evaluation reports.

ISRP Comment/Question: The proposed activities are not placed in the context of limiting factors in the watershed. Although references are given, they are general in nature; too few apply to Trout Creek.

Response: The 1996 report by the Jefferson County Soil and Water Conservation District and the 1995 biological assessment conducted by the Ochoco National Forest did provide some of that context. Since the initial submission of this proposal, the EDT process by the Confederated Tribes of Warm Springs has provided further detail of the limiting factors. That EDT process was a first rough cut that only dealt with the mainstem Trout Creek, and did not deal with several rearing refuges on tributary streams. It also only dealt exclusively with chinook, not steelhead. This points out the need for a more detailed study to fill in those missing details and provide a better basis for the proposed long-term Watershed Improvement Plan.

ISRP Comment/Question: This proposal shares text with 9404200, but no coordination is described between the two.

Response: The Trout Creek Watershed Council has been working closely with the Oregon Department of Fish and Wildlife since the inception of the long-range Watershed Improvement Plan. The Council has reviewed the habitat survey conducted by Buell and Associates for the Trout Creek basin in 1983. The council will be incorporating this information along with stream surveys conducted by ODFW into our long-range Watershed Improvement Plan. It is the intent of the Trout Creek Watershed Council to coordinate and consult with the Oregon Department of Fish and Wildlife on all aspects of future restoration efforts that will be implemented within the Trout Creek basin.

ISRP Comment/Question: Methods are not described in sufficient detail. For example, the proposal calls for 300 acres of brush control: how will this occur, where, out of how many acres that "need" this treatment, etc.?

Response: Since the revision of the proposal the objectives have changed. With regards to objectives for the watershed assessment and the long-range Watershed Improvement Plan, the Trout Creek Watershed Council intends to follow the guidelines of Oregon Watershed Enhancement Board's – Watershed Assessment Manual. The council also intends to reference the literature mentioned above.

ISRP Comment/Question: The abstract should be edited and abbreviated, and the budget better justified and described. The completion date is listed as August 2001, yet out year budget costs continue to increase through 2004.

Response: The revised proposal calls for a preliminary draft of the long-range Watershed Improvement Plan to be in place by August 2001. The proposal should adequately answer any questions with regard to the budget.

**Project: 9803100 Implement Wy-Kan-Ush-Mi Wa-Kish-Wit Watershed Assessment & Restoration Plan**
Sponsor: Columbia River Intertribal Fish Commission

CBFWA tier: 1
ISRP review: Fund (high priority). OK for a multi-year review cycle. Review again at the midpoint of the performance period, in FY2002.

ISRP Comment/Question: The proposal is clear and well written, containing a detailed rationale and approach that are set within the regional context. However, the proposal lacks detail about the activities to be undertaken through the subcontracts.

Response: Washington State University will develop cultural component of assessment methodology, work with the tribes and CRITFC to implement broad-scale watershed assessment in four subbasins, and convene an advisory committee and meet with them on a monthly basis.

The Salmon Corps will provide training in watershed assessment skills for salmon corps members (watershed assessment training will be conducted for salmon corps in the areas of water quality monitoring, habitat characterization, channel characterization, and macroinvertebrate collection) and will then provide one week of crew time to assist each tribe in conducting watershed assessment.

Pyramid Communications will develop educational brochures and publications to inform the region about the tribes' work to reverse the plight of salmon in the Columbia River Basin and assist with media campaign to highlight the tribes' successes.

ISRP comment: The proposal should provide more detail on the objectives for the outreach component and a description of how that outreach will be evaluated.

Response: The objectives of the outreach component are: (1) to inform local and regional people about the work that the tribes are doing with Bonneville Power Administration funds to restore salmon in the Columbia Basin; and (2) To promote public awareness of the tribes' plan to restore salmon. Often, local residents are unaware of the salmon

restoration efforts occurring in their watersheds. Our aim is to highlight tribal programs and efforts in each subbasin and to show people the work the tribes are doing. Workshops, meetings and field tours will be evaluated through oral and written feedback from participants. This feedback will be incorporated into planning for future public outreach events.

ISRP Comment/Question: It should also provide more detail on the objectives for the "outreach" component and a description of how that outreach will be evaluated.

Response: Currently, some of the principal investigators are also listed as principal investigators on other proposals. Should funded for two or more proposals with duplicate investigators, these positions will be back-filled by hiring a new employee or filling with an internal staff member with similar skills and experience.

**Project: 9803300 Restore Upper Toppenish Creek Watershed**
Sponsor: Yakama Indian Nation

CBFWA tier: 1
ISRP review: Delay funding until a watershed assessment is complete and a site plan and systematic evaluation of the limiting factors to justify the activities has been prepared.

ISRP Comment/Question: Delay funding until a watershed assessment is complete and a site plan and systematic evaluation of the limiting factors to justify the activities has been prepared.

Response: This criticism, while valid, fails to take into account the realities of the funding cycle. The deadline for submission of FY 2000 proposals was December 1998, when the assessment had just been initiated. Thus, even though the project sponsors were well aware that problems affecting steelhead habitat exist in the upper Toppenish/Simcoe watershed, they were not able to provide specifics. Practicality and efficiency dictate that watershed restoration activities maintain continuity while a backlog of restoration work exists, as it is infeasible to annually disassemble and reassemble crews with the necessary knowledge and experience.

Completion of the watershed assessment has been delayed, primarily by the unusual depth and persistence of the snowpack accumulated over the winter of 1998-99. The upper segments of the watershed became accessible only in June. A Riparian Proper Functioning Condition Assessment (PEC) (USD1 Bureau of Land Management, 1993. TR 1737-9) has been performed on the lower- to middle reaches of Toppenish, Branch, Willy-Dick, Agency, Wahtum, and Simcoe creeks, and a number of headwater meadows that are source areas for summer baseflows have been surveyed.

Generally, the PEC findings parallel those in the Satus watershed, i.e., stream system degradation increases in the downstream direction. This trend is the result of both cumulative effects and stream type. The higher mountain streams are generally more geologically controlled (confined), and therefore less susceptible to disturbance from human activities. Where the streams are less confined they are generally incised and disconnected from their floodplains. The notable exception to this trend is the mainstem of Toppenish Creek, from the confluence of the North Fork Toppenish, downstream to the Toppenish Lateral Canal. This reach, occupying a relatively wide canyon, is in proper functioning condition, despite the February 1996 flood of record.

Channel incision and loss of floodplain function cause serious, long-term impairment of hydrologic functioning. Much of the stream network involved is composed of dynamic, high-gradient, cobble-bedded, canyon reaches. Banks and floodplains are generally composed of a cobble matrix, with fines filling the interstices. This characteristic indicates the high-energy nature of the water and sediment processing in the intermediate elevations of the watershed. Under these conditions, channel incision is difficult and slow to reverse, and recovery can be set back by either excessively high flows or drought. Active restoration in this part of the stream system will be slow, costly, and at high risk of failure, and should be deferred in favor of flow-moderating activities higher in the watershed. Any moderation of flows will benefit the entire downstream system and increase the chances for recovery.

Current causes of degradation of the stream system in the upper watershed are predominantly related to the road system and grazing management. FEMA-funded flood damage road repairs and road improvements funded by

timber sale revenues have begun, and the project sponsors are providing technical support to ensure that these projects have results beneficial to the fisheries resource. These projects address the big ticket' items along the main routes in the upper watershed. A large number of smaller-scale road drainage problems affecting streams along the secondary roads of the upper watershed will be addressed. These problems include faulty culvert placement, and eroding cut banks and ditches. The means for addressing these problems are straightforward: culvert repositioning or replacement, cut slope re-vegetation, ditch relief, sediment trapping. The closure and rehabilitation of roads will also be pursued wherever possible, especially those encroaching on floodplains. Road rehabilitation will involve culvert removal, water barring, ripping and seeding.

Several headwater meadows have been surveyed on the Lincoln and Lost Horse plateaus that are being degraded by roads and poorly managed grazing. The most serious road problems involve culverts installed be1ow grade. These culverts have lowered the base level of the drainage system, causing headcutting, channelization, and loss of water storage capacity. The project sponsors intend to reestablish the previous base levels by repositioning the culverts, or by installing fords, depending on specific site conditions. Further degradation will be arrested by stabilizing headcuts with combinations of rock, geotextiles, and vegetation.

Grazing management will be improved by working with the grazing permit holders to implement rotational grazing systems and develop off-channel watering facilities and corrals. Currently work is coordinated with one permit holder to develop a cattle trail that will enable him to quickly move his cattle past a number of sensitive riparian areas during the initial spring turnout, and again during fall gathering.

ISRP Comment/Question: Objectives were stated in terms that were measurable, but they were primarily focused on structural changes in habitat. These are easier to measure in the short-term than population characteristics, but ultimately the success of the project must be judged by increases in the production, distribution, and diversity of fish in the watershed.

Response: Yakama Nation Fisheries Program staff has monitored steelhead in Toppenish Creek since 1989, and continue to do so. This is valuable information that helps prioritize restoration activities. However, anadromous fish populations are not the appropriate measure of the effectiveness of these restoration treatments. This watershed restoration proposal is based on the premise that healthy watershed functioning provides the watershed attributes valued by the Tribe, including fish habitat. Due to the effects of environmental conditions outside the watershed, in combination with naturally occurring disturbances within the watershed, anadromous fish population data do not measure the effectiveness of restoration treatments.

**Project: 9803400 Reestablish Safe Access Into Tributaries Of The Yakima Subbasin.**
Sponsor: Yakama Indian Nation - Fisheries

CBFWA tier: 1
ISRP review: Fund in part to finish objectives 1-4, development of a watershed assessment and an implementation plan. Upon completion of the plan, resubmit a proposal with specific activities fully justified by the information gained from objectives 1-4.

ISRP Comment/Question: This proposal does a good job of defining the fishery and related habitat problems and identifying a practical solution. Specifically, the proposal provides a strong rationale for restoring passage and defines priority areas where the work is needed. However, the rationale that reestablishing tributary habitat will replace lost mainstem habitat is not obvious (p. 4558).

Response: This project will restore access to tributaries that historically provided over 200 miles of habitat for steelhead, and salmon. Artificial barriers have reduced available habitat to just eleven miles. These streams have been identified by tribal and state biologists as "no-brainers" for passage recovery, because they could provide valuable spawning and rearing habitat simply by addressing the barriers and unscreened diversions. No other actions are necessary to make these streams productive. Adequate instream flow exists. Riparian and floodplain conditions, though highly variable, are generally adequate to support salmonids. Water quality is generally within state standards. However, this project is not intended to replace mainstem habitat. Rather, reconnection of these

rearing/spawning areas will recover a part of the watershed that has been disconnected since the onset of irrigated agriculture, which will contribute to salmon recovery.

ISRP Comment/Question: A discussion of the salmon life histories that would likely be restored as a consequence of tributary access is needed.

Response: Life history stages that will benefit from this project include adult holding and spawning, egg incubation, alevin, fry and parr rearing, for steelhead, chinook and coho salmon. The headwaters of many of these tributaries will support steelhead spawning and rearing, while lower reaches will support spawning and rearing for salmon. Moreover, salmon fry/parr that hatched elsewhere in the basin already congregate below the targeted barriers. Research demonstrates that Yakima Basin fry/parr will move many miles upstream in search of suitable rearing environs, thus it is anticipated that fish from other parts of the watershed will access these streams for rearing.

ISRP Comment/Question: The monitoring design is not adequately described.

Response: This project will reconnect habitat that is currently not accessible. Anadromous fish does not utilize areas above the target barriers. Limited monitoring will be conducted to determine whether reconnected habitats are utilized by salmon and steelhead, however project managers believe that a large scale monitoring program is not necessary for this project. The bulk of funding will be geared toward construction of passage facilities and screens.

**Project: 9900300 Evaluate Spawning Of Salmon Below The Four Lowermost Columbia River Dams**
Sponsor: Washington Department of Fish and Wildlife, Oregon Department of Fish and Wildlife, U.S. Fish and Wildlife Service, Pacific Northwest National Laboratory

CBFWA tier: 1
ISRP review: Fund in part at a reduced level until feasibility of the juvenile work and possible application of the hydraulic work can be established. Review progress after the first year's work to determine next steps.

ISRP Comment/Question: How will juveniles produced in the study area be distinguished from juveniles that have emigrated into the area from upstream?

Response: The project sponsor expects to identify juveniles emerging and rearing in the study area based on size and believe that this method is feasible for the following reasons. The study area is located just below Bonneville Dam (3 miles) with little or no suitable spawning habitat between the study area and Bonneville Dam; therefore, fish emigrating into the study area must pass Bonneville Dam. Prior to June the vast majority of the juvenile chinook migrating past Bonneville Dam would be yearling spring chinook and fall chinook releases from Spring Creek Hatchery, both of which are significantly larger than chinook emerging and rearing in the study area. Prior to June, few if any of the chinook passing Bonneville Dam are similar in size to juveniles rearing in the study area. After June separation by size may no longer be feasible. This is one of the questions that this study is attempting to answer. Results to date (FY1999) support the theory that prior to June, based primarily on size, the project sponsor will be able to identify fish rearing in the study area from those emigrating into the study area. Additionally, general morphological characteristics, recovery of fin marked juvenile chinook, size at release data for juvenile fall chinook and yearling spring chinook smolts, and size of juvenile chinook passing Bonneville Dam further substantiate these findings. Finally, during FY1999 identification of juvenile chinook as being produced in the study area was also substantiated using expected time of emergence. Beginning and peak emergence dates, estimated using seining data (catch <50mm), compared favorably with expected emergence dates, estimated based on spawning time and subsequent thermal units, which suggests that the fish that were capturing were indeed produced in the study area.

ISRP Comment/Question: What is the likelihood that enough juveniles can be collected and marked to be able to expect enough recoveries to be able to estimate smolt to adult returns?

Response: This is the exact question that this project intends on answering through the FY2000 proposal. During FY1999 it was proved that the project sponsor was able to identify juvenile fall chinook rearing in the study area from those emigrating into the study area from upstream. Chinook recovered prior to June are of similar size as wild chinook tagged in the Hanford Reach and the Lewis River. This winter the project sponsor will be estimating the

number of fish that must be tagged to determine a smolt to adult survival rates, but lots of 25,000 or 50,000 are typically tagged for hatchery stocks. The final step of this process will occur next spring when attempts to determine if adequate numbers of chinook at an adequate size can be captured for tagging purposes. The proposal, as it is written, states that attempts to determine the feasibility of CWT marking fish, not that the project sponsor would accomplish this task in FY2000.

ISRP Comment/Question: What management use would be served by the information on juveniles if it could be attained?

Response: The first piece of data would be a smolt to adult survival rate for naturally produced fall chinook. Within the Columbia Basin there are very few of these data available so any place where survival rates can be estimated for naturally produced fish would be highly valuable. These fish could be used as surrogates for other wild populations or for comparative purposes when evaluating various salmon recovery efforts, including habitat improvement projects. Additionally, by CWT marking these fish, there may be the ability to obtain data concerning ocean distribution and freshwater run timing in addition to estimating impacts from Columbia River fisheries. All of the data together will provide managers with the tools to develop escapement goals and manage fisheries to protect these fish. Finally, tagging and recovery efforts may allow for estimates of juvenile production for the study area as is currently occurring for the Lewis River. The data could be used to develop egg to smolt survival rates.

ISRP Comment/Question: It would be advisable to conduct a pilot study that would document the general magnitude of spawning that occurs, prior to attempting to relate spawning to a habitat profile.

Response: Spawning surveys have been conducted in this area annually since 1995 and since 1997 fall chinook spawning population estimates have been developed based on recent carcasses tagging and recovery efforts. Population estimates have ranged from 1,000 to 5,000. It was the results from these pilot studies, funded by WDFW and ODFW, which lead us to develop this project proposal and initially receive BPA funding for FY1999. With this documentation of fall chinook spawning populations in the study area, it is prudent to develop habitat profiles for the purposes of identifying preferred habitat for fall chinook and chum spawning below Bonneville Dam.

**Project: 9900600 Restoration Of Riparian Habitat In Bakeoven / Deep Creeks**
Sponsor: Wasco County Soil and Water Conservation District

CBFWA tier: 1
ISRP review: Fund for one year. Subsequent funding contingent on completion of the detailed restoration plan identified in the proposal.

ISRP Comments/Question: Fund for one year. Subsequent funding contingent on completion of the detailed restoration plan identified in the proposal.

Response: The Wasco County Soil and Water Conservation District concurs with comments and recommendation of the ISRP for FY2000. A detailed restoration plan will be produced within the next year.

**Project: 9901100 Assess Fish Habitat & Salmonids in the Walla Walla Watershed in Washington**
Sponsor: Washington State Department of Fish and Wildlife

CBFWA tier: 1
ISRP review: Delay funding until an independent comprehensive review of the Walla Walla program is done. The review needs to be coordinated with related projects (20021, 20127) to identify overlap and collection of unnecessary data.

ISRP Comment/Question: Delay funding until an independent comprehensive review of the Walla Walla program is done. The review needs to be coordinated with related projects (20021, 20127) to identify overlap and collection of unnecessary data.

Response: The ISRP recommends that this proposal be evaluated as part of a comprehensive Walla Walla program review. This has already been done four times, including the Walla Walla Subbasin Plan (CTUIR et al. 1990), Wy-Kan-Ush-Mi Wa-Ksih-Wit, Tribal Restoration Plan (CRITFC 1995), Walla Walla Basin Reconnaissance Report (COE 1997), and in the subbasin plan updates provide in the CBFWA FY 2000 Annual Implementation Work Plan. These documents call for numerous and comprehensive actions to restore salmon and steelhead. The documents also identify monitoring and evaluation activities as critical to adaptive management.

ISRP Comment/Question: Several proposals for the Walla Walla address freshwater production, (9901100, 20021, 20127). Their objectives are not readily distinguishable. It is not clear whether they are coordinated or duplicative. For example, both 9901100 and 20021 include genetic components.

Response: A Power Planning Council watershed review of the Walla Walla Basin projects was completed in 1998. Having continued to coordinate projects since that review. Coordination between projects 9901100 and 20021 is clearly indicated in those proposals. Project 20021 was to trap and enumerate adult steelhead in Mill Creek and the Touchet River. Juveniles would be PIT tagged and smolt production would be estimated by using smolt traps. The data would then be used to estimate smolt-to-adult survival rates. Project 9901100 does not include operation of traps for adults or smolts, nor does it attempt to estimate survival rates. It determines distribution and relative abundance of salmonids during summer and at spawning, and habitat conditions for salmonids within the Walla Walla Basin within Washington. This project also conducts genetic analyses for steelhead and bull trout within the basin. Project 20021 states that it will collect and archive DNA samples for future analysis in coordination with project 9010 (1998 project number for project 9901100). Therefore, these two projects are clearly coordinated and are complementary projects, not duplicative as suggested by the ISRP. Components from both projects are necessary for a full understanding of wild steelhead populations and to properly manage these populations in the Washington portion of the Walla Walla Basin. Project 20127 has some similar objectives and tasks to project 9901100. However, the Washington Department of Fish and Wildlife (WDFW) cannot conduct this effort within the State of Oregon, while the Umatilla Tribe can. Meeting this summer with the Umatilla Tribe to continue to improve coordination of these two projects.

ISRP Comment/Question: The proposal mentions that Lyons Ferry stock steelhead are currently being used for mitigation in the Walla Walla River Basin. It expresses a concern that several other stocks of steelhead may be identified in the basin, and that a different broodstock may be needed. The DNA information proposed for collection will not be critical for development of the broodstock, if a broodstock is even needed.

Response: Recent Columbia River Fish Management Plan renegotiations, and the March 1999 Biological Opinion for hatchery production within the Columbia Basin indicate that local broodstocks are preferred, and in some cases required. The National Marine Fisheries(NMFS) has strongly expressed a desire for the WDFW to change to a local broodstock in the Walla Walla Basin to minimize potential adverse interactions between hatchery and listed wild stocks of steelhead. The Umatilla Tribe has proposed use of a local stock from the upper Walla Walla for hatchery supplementation within the Basin. Washington's Wild Salmonid Policy requires all actions be taken to preserve wild populations before supplementation is adopted. The WDFW feels that it is prudent to examine existing populations of steelhead to determine whether genetic distinctions exist among various populations in different geographic areas of the Walla Walla Basin from which to develop local hatchery broodstocks. This information is necessary for proper management decisions regarding continuation of a legally mandated mitigation program, and consideration of potential hatchery supplementation, or recovery efforts for listed steelhead stocks.

**Project: 9901200 Coordinate/Facilitate Watershed Project Planning/Implementation**
Sponsor: Kittitas-Yakima Resource Conservation and Development District

CBFWA tier: 1
ISRP review: Delay funding until deficiencies are corrected. Specifically, if they are doing the coordination described in the proposal, why don't any of the habitat restoration proposals in the basin mention the YRWIC? What specific projects are being implemented under objective 2? They should list the limiting factors mentioned on page 12 and describe how the projects they endorse address those limiting factors.

ISRP Comment/Question: Specifically, if they are doing the coordination described in the proposal, why don't any of the habitat restoration proposals in the basin mention the YRWIC? What specific projects are being implemented under objective 2?

Response: The YRWIC's sum is greater than the parts. Their primary function is coordination and administrative by nature and it is to create a framework for project decision making. It is a process, rather than a start and ending project, to identify projects that address priorities in the Yakima River basin. These priorities will be established and collated through YRWIC's examination of the State's salmon recovery limiting factors analysis currently being performed, basin modeling work being done through the YKFP project (Bruce Watson), priority basin work being developed by the U.S. Bureau of Reclamation, and the technical expertise of YRWIC participating agencies. A project matrix will combine basin priorities with current or planned habitat projects. The matrix will, in essence, provide a tool for recognizing which basin priorities are being addressed, and which priorities need projects developed to improve trout, steelhead and salmon habitat. The development of future projects that meet the greatest need can then be identified for individual agency implementation.

The request for support by the NWPPC is to assist in meeting the goals outlined in Objective 2. The framework for doing that work has not been completed and that is why the YRWIC is asking for support. It is an investment in good science and policy being used to implement good projects.

ISRP Comment/Question: It is not always apparent where the YRWIC has its own functions separate from those of the individual member agencies that participate. For example, does Objective 2 imply that the YRWIC is going to implement its own habitat projects or does it simply play a supportive role by endorsing those projects it considers best?

Response: The YRWIC does not implement its own habitat projects. Instead, the proposal outlines a process which its members will work on to identify where projects in the basin may be needed to meet specific needs of the fish and provide a forum for coordination of project implementation by lead agencies.

ISRP Comment/Question: Will the YRWIC develop its own planning strategy, and if so, how will this differ from those of the individual member agencies?

Response: YRWIC will not be developing their own planning strategy. Watershed planning strategies are being developed by the Yakima River Basin Planning Unit. Each individual participating agency also has their own internal plans. However, through agency membership involvement, those plans will be made available to the YRWIC to integrate into their framework for process and make project coordination possible.

ISRP Comment/Question: Will the YRWIC develop its own scientific criteria for monitoring effectiveness (e.g., Objective 5)?

Response: The evaluation process outlined in Objective 5 is intended to measure the success of the YRWIC's activities as outlined in the proposal - not measure the success of each individual project that may be implemented by agencies as a result of working through or with the YRWIC.

Measured success of the YRWIC will be accomplished by: 1) If the YRWIC can identify, collaboratively, and target projects for implementation in the most critical areas of the basin; 2) How often YRWIC products and services are used by watershed planning, salmon recovery and other processes in the basin; 3) Continued involvement of participating agencies; 4) Increased involvement and membership in the YRWIC by more area agencies (cities, ports, etc.); and 5) Successful community outreach of the YRWIC to be used as a forum for informing the community about watershed issues, projects, science, etc.

ISRP Comment/Question: What process is used by the Interagency Council to make decisions, and how are conflicts resolved between the Council and the priorities of its individual members?

Response: The YRWIC adopted by-laws on June 16, 1999. A copy is attached to this document. Conflict resolution is to be developed with the formation of project evaluation criteria.

ISRP Comment/Question: The emphasis of the Watershed Information Center seems to be a bookkeeping function (e.g., where projects have and have not been completed) rather than the evaluation function implied by Objective 5.

Response: Kittitas-Yakima Resource Conservation and Development District (USDA sponsored) offered to act as the administrative agent for the YRWIC group for the 2000 BPA funding proposal and the YRWIC concurred it was an appropriate entity to offer and supply that function. The facilitation and coordination of communications by the Watershed Information Center - or any other entity - is needed to assist in keeping the YRWIC functioning.

**Project: 9901400 Restore Anadromous Fish Habitat In The Little Canyon Creek Subwatershed**
Sponsor: Clearwater Focus Watershed Program - Idaho Soil Conservation Commission

CBFWA tier: 1
ISRP review: Delay funding until they demonstrate relation to fish and wildlife and include a clear statement of overall objectives of this project, the relationship of project objectives to overall basin restoration objectives, as well as timelines, and a rationale (prioritization via a watershed assessment) indicating why specific elements are being undertaken, and in what order. A comprehensive review, via a visiting committee, of all habitat restoration projects within the Clearwater basin is needed.

ISRP Comment/Question: Delay funding until they demonstrate relation to fish and wildlife and include a clear statement of overall objectives of this project, the relationship of project objectives to overall basin restoration objectives, as well as timelines, and a rationale (prioritization via a watershed assessment) indicating why specific elements are being undertaken, and in what order.

Response: To protect and improve habitat conditions to ensure compatibility with the biological needs of salmon, steelhead, and other fish and wildlife species, the Northwest Power Planning Council has adopted the following as a program habitat goal: “Ensure human activities affecting production of salmon and steelhead in each subbasin are coordinated on a comprehensive watershed management basis.” (Columbia River Basin Fish and Wildlife Program, Section 7.7, p 7-39) This methodology is a way of doing business that emphasizes the organization of goals and objectives of all interests in order to maximize available natural, human, and fiscal resources. Model watershed programs were begun to implement this goal.

The Clearwater River was designated as a focus subbasin in Idaho State to apply the approaches developed in the model watersheds as provided by Section 7.7A.4 of the Columbia River Basin Fish and Wildlife Program. As a result of early scoping meetings it was determined that the focus program in the subbasin should be co-coordinated by Idaho State and the Nez Perce Tribe. The governor selected the Idaho Soil Conservation Commission to be the lead entity to support local subbasin efforts to coordinate watershed activities for the state; the Nez Perce Tribe selected the Tribal Fisheries Department.

The Clearwater Focus Program began mid Fiscal Year 1997 with the following goal: Coordinate multiple jurisdictions, agencies, and private landowners to protect, restore, and enhance fisheries habitat to increase juvenile and adult survival of salmon and steelhead at each freshwater life stage.

Human activities that affect the production of salmon and steelhead in the Clearwater River subbasin are related to predominate land uses, they are: agriculture, logging, mining, and grazing. Nonpoint source pollution generated by these landuses has resulted in varying degrees of freshwater rearing and spawning habitat degradation throughout the subbasin. The most common factors limiting habitat quality are sediment, temperature, and habitat alteration.

ISRP Comment/Question: Some of the detailed statements of methods are made overly complicated by inclusion of background information (problem descriptions) which should have been in the technical-scientific background section.

Response: The proposal writer reviewed several proposals from Fiscal Year 1999 that were favorably reviewed by the Watershed Technical Review Group and the ISRP and then attempted to use the format and explanation technique from one of those proposals. It would seem that attempt failed.

ISRP Comment/Question: Task b of the monitoring scheme is too vague, especially since it is supposed to encompass the most important evaluation criterion of the project: an analysis of "riparian functions" and of fish population responses. "Fish surveys" is not an adequate description of method. The monitoring of a landscape-healing project such as this one should include broader measurements of biological integrity of the stream ecosystem than just fish population levels. How will the proposers know if the specific measures being undertaken are really "best" for the riparian zone, for the stream, and for the stream's organisms, including the fish? As in Proposal 9706000, there is no biologist on the project staff, so the biological effectiveness can not be accounted for.

Response: Surveys to measure response of biological communities of streams and riparian areas can be difficult to assess. Response of biological communities may "lag" behind actual changes in stream channel condition and riparian function. The current small population of anadromous fish species and offsite impacts to their population will make it difficult to determine positive impacts to those species. Resident populations may respond more quickly are also subject to stresses that may occur spatially and temporally. The analysis of stream and riparian function will provide a baseline condition as well as provide the most direct link between application of BMPs and improvements to stream and riparian condition. Functional analysis can include both qualitative assessments and quantitative assessments and do provide clear evidence of the effectiveness of applied BMPs. Physical parameters that impact aquatic habitat (those assessed with proper functioning condition analysis) must improve before significant improvements in fish populations will occur and therefore provide a significant indicator of overall stream improvements and BMP effectiveness.

A riparian and aquatic habitat survey is scheduled during the project year. Protocols for the survey are adapted from the following: Idaho Division of Environmental Quality Protocol No. 4 – Protocols for Evaluation and Monitoring of Stream/Riparian Habitats Associated with Aquatic Communities in Rangeland Streams; No. 8 – Protocols for Classifying, Monitoring, and Evaluating Stream/Riparian Vegetation on Idaho Rangeland Streams; and BLM Technical Reference 1737-3 – Inventory and Monitoring of Riparian Areas.

Bureau of Land Management fisheries staff completed a modified Hankin and Reeves survey of the watershed in the mid-1990s.

The technical review team responsible for the development of the projects originally included biologists from the U.S. Bureau of Land Management, U.S. Natural Resources Conservation Commission, and the Idaho Soil Conservation Commission. These same biologists are part of the rejuvenation of this project and staff from the Nez Perce Tribal Fisheries Department has been added. Resumes for these people were not included with the Fiscal Year 1999 or 2000 proposals because they are advisory and not directly involved in implementation of the BMPs.

ISRP Comment/Question: This proposal does not appear to be tied to a previous watershed assessment effort, so that the proposed work, while perhaps meritorious, cannot be evaluated in the broader context

Response: The Fiscal Year 2000 proposals were for the second year of a five year project and submitted through the ISCC Clearwater Subbasin Focus Program proposal as an umbrella. Although details regarding the watershed assessments from which the projects were designed were not as extensive as those in the first year's, the umbrella proposal presented the necessary background information (FY2000 proposal #9808600, p. 9). The projects were developed for BPA funding consideration specifically because they met all proposal criteria.

ISRP Comment/Question: . For all its laudable aspects, the proposal makes the project appear (and perhaps the project really is) just a rote application of supposed BMPs without knowing or understanding their effect.

Response: It is unclear what this comment addresses. The agricultural best management practices to be implemented in the two projects are specific actions endorsed by the U.S. Natural Resources Conservation Service. (FY2000 proposal #9608600, p 15) The NRCS provides technical assistance to conservation districts and part of that includes design specifications and function assessment guidelines for BMPs. Both projects are intended to implement agricultural BMPs to achieve two primary goals: 1) provide water retention capacity in uplands to moderate hydrograph peaks and seasonal flow, 2) reduce and abate delivery of sediment to waterways. The BMPs selected for these projects are specific to the desired objectives, the subwatershed conditions and the agricultural practices existing in each.

Furthermore, the proposed BMPs are also endorsed by the Idaho Agricultural Pollution Abatement Plan and the BPA Agricultural Management Practices (Watershed Management Program). (FY2000 proposal #9608600, p 15).

**Project: 9901500 Restore Anadromous Fish Habitat In The Nichols Canyon Subwatershed**
Sponsor: Clearwater Focus Watershed Program - Idaho Soil Conservation Commission

CBFWA tier: 1
ISRP review: Delay funding until they demonstrate relation to fish and wildlife and include a clear statement of overall objectives of this project, the relationship of project objectives to overall basin restoration objectives, as well as timelines, and a rationale (prioritization via a watershed assessment) indicating why specific elements are being undertaken, and in what order. A comprehensive review, via a visiting committee, of all habitat restoration projects within the Clearwater basin is needed.

ISRP Comment/Question: Delay funding until they demonstrate relation to fish and wildlife and include a clear statement of overall objectives of this project, the relationship of project objectives to overall basin restoration objectives, as well as timelines, and a rationale (prioritization via a watershed assessment) indicating why specific elements are being undertaken, and in what order.

Response: To protect and improve habitat conditions to ensure compatibility with the biological needs of salmon, steelhead, and other fish and wildlife species, the Northwest Power Planning Council has adopted the following as a program habitat goal: “Ensure human activities affecting production of salmon and steelhead in each subbasin are coordinated on a comprehensive watershed management basis.” (Columbia River Basin Fish and Wildlife Program, Section 7.7, p 7-39) This methodology is a way of doing business that emphasizes the organization of goals and objectives of all interests in order to maximize available natural, human, and fiscal resources. Model watershed programs were begun to implement this goal.

The Clearwater River was designated as a focus subbasin in Idaho State to apply the approaches developed in the model watersheds as provided by Section 7.7A.4 of the Columbia River Basin Fish and Wildlife Program. As a result of early scoping meetings it was determined that the focus program in the subbasin should be co-coordinated by Idaho State and the Nez Perce Tribe. The governor selected the Idaho Soil Conservation Commission to be the lead entity to support local subbasin efforts to coordinate watershed activities for the state; the Nez Perce Tribe selected the Tribal Fisheries Department.

The Clearwater Focus Program began mid Fiscal Year 1997 with the following goal: Coordinate multiple jurisdictions, agencies, and private landowners to protect, restore, and enhance fisheries habitat to increase juvenile and adult survival of salmon and steelhead at each freshwater life stage.

Human activities that affect the production of salmon and steelhead in the Clearwater River subbasin are related to predominate land uses, they are: agriculture, logging, mining, and grazing. Nonpoint source pollution generated by these landuses has resulted in varying degrees of freshwater rearing and spawning habitat degradation throughout the subbasin. The most common factors limiting habitat quality are sediment, temperature, and habitat alteration.

ISRP Comment/Question: Reviewers doubt that the issues in the two basins are the same.

Response: Actually the issues in the two subwatersheds (the project areas are not basins) are very similar because they are in the same 5$^{th}$ field hydrologic unit. The following excerpt is from the umbrella project, FY2000 proposal #9608600, p 11.

Little Canyon Creek is the primary tributary of Big Canyon Creek. Big Canyon Creek is a tributary to the Clearwater River. Big Canyon Creek is divided into three subwatershed, they are: Cold Springs, Sixmile-Posthole Canyon, and Nichols Canyon. Little Canyon Creek is divided into three subwatersheds; they are Holes Creek, Long Hollow Creek, and Little Canyon Creek. The Little Canyon Creek subwatershed enters the Nichols Canyon subwatershed three miles above the Clearwater River.

A map would have conveyed this relationship much more succinctly however; importing graphics into the proposal format resulted in too many fatal errors of the program to continue along that path.

The subwatershed projects were submitted as different proposals to maximize available NRCS technical staff and the soil conservation district boards, who are elected officials as managers. This decision does not affect the level of requested funding.

ISRP Comment/Question: Comments made on 9901400 pertain – there does not appear to be any basis for the project in a prior watershed assessment, and an overall review of all of the habitat projects in the Clearwater needs to be undertaken before this assessment goes forward.

Response: The Fiscal Year 2000 proposals were for the second year of a five year project and submitted through the ISCC Clearwater Subbasin Focus Program proposal as an umbrella. Although details regarding the watershed assessments from which the projects were designed were not as extensive as those in the first year's, the umbrella proposal presented the necessary background information (FY2000 proposal #9808600, p. 9). The projects were developed for BPA funding consideration specifically because they met all proposal criteria.

**Project: 9901600 Protect & Restore Big Canyon Creek Watershed**
Sponsor: Nez Perce Tribal Fisheries/Watershed Program

CBFWA tier: 1
ISRP review: Delay funding until the monitoring and evaluation plan is strengthened. A comprehensive review of all habitat restoration activities in the Clearwater basin is needed.

ISRP Comment/Question: Delay funding until the monitoring and evaluation plan is strengthened. A comprehensive review of all habitat restoration activities in the Clearwater basin is needed.

Response: A Clearwater Subbasin Peer Review Group/ Advisory Committee is being developed by the Clearwater Sub-basin Focus Watershed Program (led by the Nez Perce Tribe (NPT) and the Idaho Soil Conservation Commission (ISCC)). The Clearwater Sub-basin Focus Watershed Program will coordinate the activities of this committee. The cooperating agencies will include the Idaho Division of Environmental Quality, US Forest Service, Bureau of Land Management, Bureau of Indian Affairs, Nez Perce Tribal Fish Commission, Nez Perce Tribal Water Resources, Idaho Fish & Game, Washington State University (WSU), Idaho Department of Lands, Potlatch Corporation, Plum Creek Corporation, and private landowners. The responsibilities of this committee will include participating in prioritizing watersheds and restoration projects, discussing cost-sharing options, information dissemination, and technical review. The Clearwater Technical Advisory Committee follows direction of the NPPC's Columbia River Basin Fish and Wildlife Program, Section 7.7A.1, Coordination of Watershed Activities. This committee is being developed as part of FY99 activities.

The Clearwater River Subbasin Salmon and Steelhead Production Plan was the first attempt at a basin-wide assessment and plan. The plan included limited discussion of habitat problems, focusing largely on supplementation goals within the subbasin. Numerous watershed assessments (largely focused on 5$^{th}$ field USGS HUCs) have been completed in the Subbasin since the 1990 plan. These have been used, where available, to refine the prioritization of activities within watersheds. The priority activities in the Plan and more localized assessments were refined and prioritized by the Nez Perce Tribe and the U.S. Forest Service. Current projects were chosen based on this two phase prioritization process and on the basis of high priority needs (especially as pertaining to spawning and rearing habitat) of salmonid populations of concern in the Clearwater Subbasin. Current projects were initiated as part of the NWPPC Early Action Watershed Program. These projects are clearly needed and have been identified through a multi-phase prioritization process that includes the only existing basin-wide plan, more recent assessments, and further refinement by staff in both the Forest Service and NPT. This initial prioritization process has included all steps as outlined in section 7.7B.2 of the NWPPC Fish and Wildlife Plan.

A comprehensive assessment of the Clearwater River Subbasin is currently underway and will be completed June 2000. The NPT and the ISCC are the lead agencies on the project. The Center for Environmental Education at Washington State University is the subcontractor responsible for conducting the Clearwater Subbasin Assessment.

The Clearwater Technical Advisory Committee will oversee and contribute in completing this effort as guided in Section 7.6C Coordinated Habitat Planning, Watershed Assessment, of the NPPC's Columbia River Basin Fish and Wildlife Program.

FY99 activities include an indepth watershed assessment and planning project that will be drafted by October 1999 and completed in June 2000. The decision to continue implementing in the watershed while the assessment is completed is based on current understandings of priorities in the watershed. All project implementation activities are ones that have been repeatedly identified as priorities, can be carried out without detailed assessment and planning work, and will undoubtedly be called for as priority activities in the forthcoming assessment. These activities included riparian revegetation and riparian fencing. These activities do not comprehensively address all problems identified in the watershed, but represent instead, strategic, necessary activities that can be carried out while more complex limiting factors are assessed and needed planning occurs.

Current projects were initiated as part of the NWPPC Early Action Watershed Program. These projects are clearly needed and have been identified through a multi-phase prioritization process that includes the only existing basin-wide plan, more recent assessments, and further refinement by staff in the NPT. This initial prioritization process has included all steps as outlined in section 7.7B.2 of the NWPPC Fish and Wildlife Plan.

In the initial year of the project, fencing was completed under sub-contract with the Nez Perce Tribal Salmon Corp. program.

The project was again moved forward as part of FY99 activities. Even with current data, not enough is known about the watershed to carryout site specific planning for a number of limiting factors, including sediment reduction and peak and low flow problems. FY99 activities include an in-depth watershed assessment and planning project that will be drafted by October 1999 and completed in June 2000. The decision to continue implementing in the watershed while the assessment is completed is based on current understandings of priorities in the watershed. All project implementation activities are ones that have been repeatedly identified as priorities, can be carried out without detailed assessment and planning work, and will undoubtedly be called for as priority activities in the forthcoming assessment. These activities included riparian revegetation and riparian fencing. These activities do not comprehensively address all problems identified in the watershed, but represent instead, strategic, necessary activities that can be carried out while more complex limiting factors are assessed and needed planning occurs.

Four steps to evaluate the effectiveness of fencing will be carried as part of this project (Craig Johnson, personal communication, July 7, 1999): visually examine the banks protected by the fencing before and after the fencing installation and look for active erosion indicated by rills, trails, and gullies; along a "greenline transect" (a line near the water's edge typically marked by continuous vegetation), assess vegetation coverage, root depth, and diversity before and following fencing; monitor the generation of new growth about one meter bankward from the green line transect; establish cross sections and a stream profile through the protected reach before fence installation and after. Steps 1-3 will be done once or twice a year and the resurvey portion of Step 4 will be done near the end of the project, up to five years after fence installation.

In addition to the fencing specific monitoring, discharge, temperature and sediment will be monitored to continue providing baseline data on the watershed. In addition to gauging impacts on water quality, visual assessment and photo point monitoring of all revegetation activities will be conducted before and after, and as part of future funding years to monitor success of revegetation efforts. A long-term monitoring and evaluation plan is being completed during FY 1999. A final draft of the plan will be completed before the beginning of FY 2000. This plan is being designed in cooperation with Washington State University. This monitoring plan will include temperature, discharge, sediment, nutrients, benthic macroinvertebrates, embeddedness at a minimum. The long-term monitoring and evaluation plan will be completed as a component of the watershed assessment currently underway as part of FY1999.

ISRP Comment/Question: This particular (Big Canyon Creek) proposal identifies logging activities, and associated flood damage (largely sedimentation and erosion related) during the late 1995 floods, as the primary habitat problem in the basin. Although roads are identified as the source of 60% of the sediment delivery to the creek, apparently no road mitigation measures are to be undertaken (as they are in companion projects). Instead, the project focuses on

riparian fencing, revegetation, and removal of livestock from the riparian corridor as the primary mitigation measures. Reviewers wonder whether the project can hope to be successful if the sediment problem is not addressed.

Response: Unlike other companion projects, the road related sediment sources are not unstable logging roads. Instead surface water in the uplands has been ditched to the roads and so surface water enters the creek through road ditches rather than through tributaries. The exact source of sediment is not currently known, although agricultural lands in the uplands are suspected as the main source. Because of the complexity and size of the problem, and because of the data gaps, implementation projects focused on sediment reduction cannot be carried out effectively during this funding cycle. The watershed assessment currently being carried out by NPT and WSU will capture some of the needed data. The collection of data in this FY2000 project will fill in the remaining data necessary to develop a strategic sediment reduction plan. This problem is addressable. But NPT prefers to collect necessary data and carryout planning to ensure that the problem is addressed in the most effective way possible.

ISRP Comment/Question: Furthermore, the proposal doesn't tell how many miles of stream and fence are involved, nor does it describe the riparian zone or justify the need for plantings.

Response: Big Canyon Creek from its mouth to the left-bank tributary named Sixmile Canyon comprises an outstanding Steelhead resource (Allen and Jazdzewshi, 1986). Fencing efforts will focus on the Big Canyon reach between Little Canyon Creek, 2.3 miles upstream from the mouth, and Sixmile Canyon, for a total of less than five miles out of the 30-plus miles Big Canyon Creek. The exact number of fence miles will be determined after having inventoried the reach in detail and after having met with landowners to discuss off-site watering alternatives. To accelerate recovery, plantings will be placed in reaches where vegetation has essentially been stripped. The goal is to place the fencing approximately 100 feet from the channel, but the exact location of the fencing will depend upon bank steepness and the integrity of bank materials to support the fencing. In areas, natural succession would eventually restore vegetation after fencing eliminates the disturbance of cattle in the riparian zone. Unfortunately, temperature is a limiting factor in the watershed. Denuded, unstable and eroding banks and a lack of shade and large woody debris are the legacy of decades of grazing and development. Plantings are necessary to speed up the process of providing shade and large woody debris inputs to the creek.

ISRP Comment/Question: Statements like that made in Section 8a, paragraph 1—". . . due to man made [sic] influences the stream can no longer act as efficiently as it once did." are meaningless. Efficiently in what respect? What are the units of stream efficiency?

Response: The project sponsor agrees with the criticisms. When this proposal was written this idea was badly expressed. The idea that the project sponsor had in mind was the need for understanding how hydrology, sediment transport, channel shape and function, large woody debris, water quality, riparian vegetation and other factors function to provide habitat conditions for salmonids of concern in the watershed. These aspects of riparian function have been impaired by human activities in the watershed. Limiting factors that impact these functions will be addressed in this project and in future projects that will be guided by past and current assessment and monitoring and evaluation activities.

ISRP Comment/Question: In the same paragraph, fecal coliform are mentioned. Why? What do they do to fish?

Response: Fecal coliform are mentioned along with nutrient concentrations as the two largest water quality concerns from a human perspective in the watershed as stated by Kucera et al. Fecal coliforms can also indicate the presence of cattle in the surface water system. The statement merely provides scientific background and is not the focus of any research in the proposal.

Reference:

Allen, S.J. Patera, and C. Jazdzewshi. Pacific Northwest Rivers Study: 1986 Final Report. Idaho Department of Fish and Game. Lewiston, Idaho.

**Project: 9901700 Protect & Restore Lapwai Creek**
Sponsor: Nez Perce Tribal Fisheries/Watershed Program

CBFWA tier: 1
ISRP review: Delay funding until the project is scientifically justified. A comprehensive review of all habitat restoration activities in the Clearwater basin is needed.

ISRP Comment/Question: A comprehensive review of all habitat restoration activities in the Clearwater basin is needed.

Response: A Clearwater Subbasin Peer Review Group/ Advisory Committee is being developed by the Clearwater Sub-basin Focus Watershed Program (led by the Nez Perce Tribe (NPT) and the Idaho Soil Conservation Commission (ISCC)). The Clearwater Sub-basin Focus Watershed Program will coordinate the activities of this committee. The cooperating agencies will include the Idaho Division of Environmental Quality, US Forest Service, Bureau of Land Management, Bureau of Indian Affairs, Nez Perce Tribal Fish Commission, Nez Perce Tribal Water Resources, Idaho Fish & Game, Washington State University (WSU), Idaho Department of Lands, Potlatch Corporation, Plum Creek Corporation, and private landowners. The responsibilities of this committee will include participating in prioritizing watersheds and restoration projects, discussing cost-sharing options, information dissemination, and technical review. The Clearwater Technical Advisory Committee follows direction of the NPPC's Columbia River Basin Fish and Wildlife Program, Section 7.7A.1, Coordination of Watershed Activities. This committee is being developed as part of FY99 activities.

A comprehensive assessment of the Clearwater River Subbasin is currently underway and will be completed June 2000. The NPT and the ISCC are the lead agencies on the project. The Center for Environmental Education at Washington State University is the subcontractor responsible for conducting the Clearwater Subbasin Assessment. The Clearwater Technical Advisory Committee will oversee and contribute in completing this effort as guided in Section 7.6C Coordinated Habitat Planning, Watershed Assessment, of the NPPC's Columbia River Basin Fish and Wildlife Program.

ISRP Comment/Question: This proposal for Lapwai Creek identifies irrigation activities, and flood damage from the 1996 flood, as the primary habitat problem in the basin.

Response: The Clearwater River Subbasin Salmon and Steelhead Production Plan was the first attempt at a basin-wide assessment and plan. The plan included limited discussion of habitat problems, focusing largely on supplementation goals within the subbasin. Numerous reports and monitoring activities have taken place in Lapwai Creek watershed. These have been used, where available, to refine the prioritization of activities within the watershed. Activities were prioritized on the basis of high priority needs (especially as pertaining to spawning and rearing habitat) of salmonid populations of concern in the Clearwater Subbasin.

Current projects were initiated as part of the NWPPC Early Action Watershed Program. These projects are clearly needed and have been identified through a multi-phase prioritization process that includes the only existing basin-wide plan, more recent assessments, and further refinement by staff in the NPT. This initial prioritization process has included all steps as outlined in section 7.7B.2 of the NWPPC Fish and Wildlife Plan.

In the initial year of the project, fencing was completed under sub-contract with the Nez Perce Tribal Salmon Corp. program.

The project was again moved forward as part of FY99 activities. Even with current data, not enough is known about the watershed to carryout site specific planning for a number of limiting factors, including sediment reduction and peak and low flow problems. FY99 activities include an in-depth watershed assessment and planning project that will be drafted by October 1999 and completed in June 2000. The decision to continue implementing in the watershed while the assessment is completed is based on current understandings of priorities in the watershed. All project implementation activities are ones that have been repeatedly identified as priorities, can be carried out without detailed assessment and planning work, and will undoubtedly be called for as priority activities in the forthcoming assessment. These activities included riparian re-vegetation and riparian fencing. These activities do not

comprehensively address all problems identified in the watershed, but represent instead, strategic, necessary activities that can be carried out while more complex limiting factors are assessed and needed planning occurs.

ISRP Comment/Question: The mitigation actions identified are riparian fencing and streamside revegetation. However, the proposed activities are inconsistent with the habitat problems identified, specifically those associated with the 1996 floods.

Response: There are three major related problems associated with the deterioration of salmon and steelhead spawning and rearing habitat in the Lapwai Creek watershed. First, stream channelization and development along the flood plains have created an environment that significantly alters the historic hydrograph in terms of both quantity and timing. It is estimated that a peak discharge nearly 3 times larger than the pre-developed condition at the mouth of the basin exists. Higher flows, especially those associated with the 1996 flood, have eroded sections of the stream deemed critical to the survival of anadromous fish in the creek. Second, Winchester Lake and Mann Lake are being operated to satisfy irrigation demands. This has a direct negative impact on lower flows in the watershed and results in additional loss of riparian habitat and warmer water temperatures. Third, the destruction of riparian vegetation has led to higher water temperatures, reduced large woody debris inputs and degraded riparian habitat.

The combined effects are that high flows, associated with snow melt and rain-on-snow events, scour and erode channel banks, while low flows, due to reservoir regulation and lack of shading on the stream allow additional sedimentation and higher temperatures in spawning areas. At this point, there is no coordinated effort to address the problems within the watershed. This project proposes a scientifically justifiable five-year restoration plan beginning in year one with the following agenda: 1) establish a Lapwai advisory group to address watershed needs, 2) gather additional hydrologic data on Lapwai Creek, 3) repair riparian zones, and 4) disseminate information from ongoing watershed work.

The initial task would be to create a comprehensive flood management plan while working with the advisory group to identify possible solutions. The plan would determine the specific areas of need for flood hazard management work, assess alternatives, analyze environmental impacts, evaluate problems and proposed solutions, and prioritize recommendations. The goal would be to reduce the hydrologic peak during high flow times and increase flow during low flow times to reduce scouring and damage to spawning and rearing areas and to create temperature conditions suitable for salmonid habitat. The second task would involve collecting additional flow/temperature/substrate data on Lapwai Creek in an attempt to determine minimum seasonal flow requirements via the Instream Flow Incremental Methodology (IFIM). The current assessment effort is far enough underway to have determined that not enough data exists to set minimum viable flows for the creek at this time. This data is necessary to deal with flow issues over the long-term.

The repair of the riparian zones would begin with fencing off sections of stream and creating off-site watering locations for livestock. In addition, the 1997 flood left several highly visible scars along Lapwai Creek, which are currently depositing large amounts of sediment directly into the stream. These channel locations will be re-vegetated to reduce scour and sediment loads and, where necessary, the channels may be restored.

ISRP Comment/Question: How would this project assure that future floods don’t neutralize any habitat improvements that might be accomplished by planned activities?

Response: One of the goals of the comprehensive flood management plan would be to reduce future floods in the watershed. This would be accomplished by identifying critical runoff contributions to the main channel and examining potential Best Management Practices (BMPs) to reduce and delay the discharge into Lapwai Creek. Potential solutions may include off-stream temporary storage facilities, groundwater infiltration, increasing the height of the outflow structure at the two main lakes, and detention ponds. By delaying the peak discharges or storing water, summer flows could be augmented thus avoiding both flow-related problems. This portion of the project is planning phase. Implementation funding would be sought in future funding cycles.

ISRP Comment/Question: If, as the proposal indicates, “Stream reaches that are not channelized were heavily damaged in the 1996 flood event”, is the solution channelization?

Response: Absolutely not. Channelization is a problem, not a solution. The goal is to repair the riparian function of the stream bank in these critical areas while identifying steps to minimize future damage caused by large flood events such as that which occurred in 1996. The streams will be restored to near natural meandering, bank-full flow, and geometric channel shape and re-vegetated with native trees and plants. Another flood of the 1996 magnitude would have equally devastating effects if flood control and stream fencing measures are not implemented upstream of the restoration areas. However, survival of the native fish population cannot wait until all of the flood mitigation facilities are in place.

**Project: 9901900 Restore the Salmon River, in the Challis, ID area, to a healthy condition**
Sponsor: Custer County Watershed Group

CBFWA tier: 1
ISRP review: Do not fund, technically inadequate.

ISRP Comment/Question: The proposal does not adequately convey that this is a priority area for these activities.

Response: There are three "valley" type areas on the Upper Salmon River. One in Stanley Basin, the 12 mile area around Challis, and the area around Salmon. Water temperatures are the most critical factor for salmon rearing in the Salmon River. Temperatures in the Stanley area are adequate for salmon rearing, but in the Challis area the loss of riparian shading results in significant temperature increases, plus this is the upper-most area on the mainstem river that has significant sediment input into the system. It seems that to correct a problem one should start in the area with the worst conditions. We can make the most improvements in terms of water temperatures, sediment reduction, and improved rearing habitat by working in this area.

ISRP Comment/Question: The proposal falls short of establishing sound scientific principles and demonstrating clear benefits to fish and wildlife.

Response: All interim work to protect existing riparian habitat is being reviewed by NMFS, USFWS, NRCS, Peter Goodwin, IDFG, USFS, BLM, Army Corp, Water
Resources, ect. In other words, adequate scientific review has been provided as this project has evolved.

ISRP Comment/Question: Reviewers suggest that the authors make further efforts to interact with other model watershed projects in the Lemhi, Pahsimeroi, and East Fork Salmon. Together with the collaborators identified in Section 9 they could develop technically defensible approaches, procedures and a viable proposal.

Response: The technically defensible plan talked about is being developed by the Corp of Engineers and Dr. Peter Goodwin's grad students. CSWCD has agreed to allow BPA to use what was originally project dollars to assist with the cost of the grad student.

The project has been coordinated with Model Watershed, but the 12 Mile Reach is currently outside their area of coverage. This is a good project for both the landowners and the river system. The ISRP should be satisfied when the University of Idaho (Peter Goodwin's students) complete their model of the river. Additionally, funding from other sources including the Corp of Engineers is hinging on funding for FY2000 from BPA and the completion of the River Modeling by Peter Goodwin's grad student.