



Independent Scientific Review Panel
for the Northwest Power Planning Council
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MEMORANDUM

March 17, 2003

TO: Doug Marker, Fish and Wildlife Division Director, Northwest Power Planning Council

FROM: Rick Williams, ISRP Chair

SUBJECT: ISRP Review of Coeur d'Alene Tribe Trout Production Facility Master Plan (Step One Submittal) (ISRP 2003-5)

Background

At the Council's request the ISRP provides this review of the Step One Master Plan submittal for Coeur d'Alene Tribe Trout Production Facility (199004402). The ISRP is very familiar with this project having reviewed proposals and responses associated with the project in Step, annual, and provincial reviews over the past five years. Despite several relatively encouraging reviews (FY 1999, FY 2000, Step One Review of the Three-Step Process), in the latest review for the Mountain Columbia Provincial project selection process (April 6, 2001), the ISRP recommended the project not be funded. The contents of the Mountain Columbia proposal, discussions during the oral presentation, and the review response convinced the ISRP that the proposed hatchery program for adfluvial cutthroat trout did not appear to be scientifically justified and the project's objectives were not likely attainable, specifically given predation and other lake habitat concerns.

On June 27, 2001, the Council approved funding recommendations for the Mountain Columbia provincial review¹. The Council concluded that the ISRP's criticisms were so severe that further consideration of the existing artificial production proposal would be unsuccessful if returned to the ISRP for review. The Council recommended that the Coeur d'Alene Tribe be provided an opportunity to revise the project concept, reconsider the challenges intrinsic in an artificial production approach, develop a new conceptual design, and submit a revised master plan for Step One Review.

Recommendation

The ISRP does not support funding the Step One Master Plan submittal for the Coeur d'Alene Tribe Trout Production Facility (199004402).

¹ Since the time of this decision, the activities associated with the Coeur d'Alene subbasin have been realigned to the Intermountain Province.

General Comments

This proposal does not overcome ISRP concerns expressed in earlier reviews of the project on how hatchery reared cutthroat trout can fit into a system that is only marginally suitable for them. It does not attempt to rebut those concerns or discuss how the biological factors causing those concerns could be reduced to any extent by the sponsor's actions.

The proposal now includes a major focus on construction of a hatchery to produce fish for study of "ten critical uncertainties." It outlines a program to study those "critical uncertainties" over an extended time-period. The proposed studies are generally directed to learning how many large adfluvial adult cutthroat trout might result from different stocking strategies and reduction of brook trout. The plan presented would test methods of Supplementation that involve releasing smolts; implicitly assuming that the lake has capacity for more cutthroat. The plan also implicitly assumes that natural colonization of streams is not occurring and that hatchery supplementation is necessary—whether or not natural colonization is occurring is not one of the plan's Critical Uncertainties.

None of this, however, addresses the ISRP's major concern from previous reviews that because of land-use practices and the drastically altered fish community in the lake, chances for producing significantly more and larger cutthroat trout in Reservation tributaries are very low at best. The limiting factors on production include: 1. predation and competition by introduced species, 2. increased water temperatures and altered lake levels from hydropower operations, which further favor the introduced species, 3. fishing pressure.

The Step One submittal does not include adequate consideration of the radical change of the lake over the last several decades including the introductions of chinook and pike. Whether or not the lake has capacity for more cutthroat trout is not even one of the plan's Critical Uncertainties. Native fishes are now only a minor part of the fish community in Coeur d'Alene Lake. Even so, the authors presume that additional living space and food exist for cutthroat trout in the lake. Data presented in Appendix D of the 1998 Annual Report, however, show that cutthroat trout do not exhibit much, if any, growth from age-5 to age-6. No comparable limit seems to exist for large-mouth black bass and northern pike. Growth (and, as a likely consequence, survival) of at least the older cutthroat trout seems to be limited even at present population densities. The authors also report that juvenile abundance is as great or greater in Reservation streams as is reported for other streams in the northern Rocky Mountains suggesting that low survival in the lake is an important cause of decline for cutthroat trout.

Attachments to the proposal also show clearly that that nearly all of the few cutthroat trout in the lake near the tributary mouths are in eaten as prey items. Northern pike prefer cutthroat trout over other available prey. Numbers of smallmouth bass (not previously present) appear to be increasing rapidly and they would be expected to be effective cutthroat trout predators. Sediment loading

near creek mouths now provides ideal pike habitat and now forces cutthroat trout to twice run a predator gauntlet, once when first entering the lake at a relatively small size and again when re-entering the stream as an adult but still of a size that can be consumed by many of the predators present. While rearing in the lake, the cutthroat face sub-optimal conditions such as low dissolved oxygen levels at times in the hypolimnion, and predators, chinook salmon and northern pikeminnow, in addition to pike and bass.

Another implicit assumption of the plan is that habitat will improve in the long term future; there is discussion of the causes of degradation—agricultural practices, road/culvert practices, mining practices, the dam's effect on lake level, fire suppression—but there is little evidence of plans to correct practices or remediate damages in the review given here. There is discussion of efforts to purchase lands and to improve agricultural practices, but no discussion of efforts to replace culverts, re-route or remove roads, change fire suppression practice, remove exotic species from the lake, regulate lake level and temperature, etc.

The authors are optimistic about gains expected from habitat rehabilitation measures in Reservation streams. Their optimism exists even though trout densities in the project streams equal or exceed densities in other similar streams in the northern Rocky Mountains, and that Reservation streams are only moderately degraded. They express a desire to restore the processes that created and maintained the productivity of these systems for cutthroat trout. These processes depend on restoration of the hydrograph that created these conditions. It is unlikely that the hydrograph can be restored, but even if it were possible, projections of expected productivity gains seem excessive.

Anticipating these limitations, the authors' proposal includes development of hatchery capacity for production of 42,000 cutthroat trout of catchable size. It includes discussion of possible use of "sterile" fish or fish selectively bred for spawning time that does not overlap spawning time of wild fish. Presumably, stocked fish that were not harvested would migrate to the lake, survive as residents, or die. Those entering the lake are likely to experience low growth (and likely survival) as described earlier. Surviving sterile or selected fish are likely to interact and stress the natural population. Moreover, the planting of catchable-sized cutthroat trout in streams (or the lake) is certain to, and in fact is designed to, attract additional fishing pressure, which in turn is certain to further depress the abundance of wild fish.

In conclusion, the proposal does not provide a convincing basis for the Coeur d'Alene Tribe to expect significant and sustained increases in adfluvial adult cutthroat trout in Reservation streams. Production and planting of catchable sized fish in Reservation streams could provide harvest for short-term, intensive fisheries similar to fisheries produced by stocking reservation ponds with rainbow trout, but that strategy will further stress any natural population in a stream and handicap efforts to protect wild stocks.

Attachment 1. Master Plan and Supporting Documentation Reference Chart with ISRP Comments

In support of the master plan submitted by the Coeur d'Alene Tribe this reference chart was developed to help reviewers quickly access information contained in the plan. The Northwest Power Planning Council identified the following issues as ones that need to be addressed in the master planning process for new artificial production facilities. This document will act as a quick reference guide to the Tribe's responses to each of the individual issues. Unless otherwise noted, page numbers and section guides refer to locations in the master plan.

NOTE: The ISRP provides review comments on each of the 3-Step elements in the reference chart below, in blue font and italics.

Attachment 1: Program Language Regarding Master Planning Process

- **project goals;**

The project goal is to produce adfluvial cutthroat trout for harvest, research, conservation and tribal involvement purposes (See page 3 ,*Project Goal*).

ISRP Comment:

Saying that the goal is to produce cutthroat implies that simply releasing a certain number of fish from the hatchery (or acclimation containers) every year will mean success. Such is not the case. Enough of those fish must survive and grow to provide harvest.

The research goal seems particularly inappropriate and unfounded. There seems no unique or time-critical opportunity here for research.

The harvest, conservation, and tribal involvement goal components seem appropriate and understandable; however, this is not a project that is likely to further those goals, because it does not address the primary limiting factors determining abundance of adfluvial cutthroat

- **measurable and time-limited objectives;**

The four phased approach, which provides interim fishery benefits while the hatchery program is developed and becomes refined based on evaluations of critical uncertainties, is depicted on page 10 (*Phased Approach 3.2.2*).

ISRP Comment:

There is no convincing case that interim or long-term benefit can be expected from the project. Survival of cutthroat trout now appears to be limited by predators and competitors in the lake. This is a risky approach because the probability of failure seems so high. This is an approach that would enable the hatchery to be constructed and operate for a number of years before adequate feedback regarding its success or failure (in biological terms) could be generated.

- **factors limiting production of the target species;**

Habitat conditions, predation, water levels (low) and temperatures (high) are some of the discussed limiting factors that influence population sizes for cutthroat trout (See page 20 (*Biological Requirements 5.4*)). Detailed research, monitoring, and evaluation design (Section 7), will address key limiting factors. Additional information is contained in the supplementation feasibility report.

ISRP Comment:

Further research is not needed to understand the biological factors that will limit the survival and growth of hatchery-produced cutthroat trout. Those factors have been clearly identified in the monitoring already completed. Presently, low growth, survival, and population size suggests that the lake fish community is controlling cutthroat trout. What is needed is identification by project sponsors of how those factors might be ameliorated. That has not been done in the current proposal, and indeed probably would be impossible to do in a practical manner.

- **expected project benefits (e.g., gene conservation, preservation of biological diversity, fishery enhancement and/or new information);**

Project objectives and benefits include: (1) Providing fishery opportunities that yield increased harvestable populations; (2) Increased understanding of population dynamics, gene conservation, carrying capacity, use of habitat, preservation of biological diversity, and limiting factors through rigorous research; (3) Allows the CDA tribe to become an active participant in fish conservation, fishery development and fish management (See page 6 (*Project Objectives and Benefits 2.0*)).

ISRP Comment:

The project is not likely to provide significant gains in harvestable cutthroat trout, and the proposed studies are not likely to provide answers necessary to overcome the perceived problems. The notion that hatchery production will provide harvest opportunity seems to be solely based on IDFG experience 30 years ago, prior to the introduction of northern pike.

- **alternatives for resolving the resource problem**

A combined rainbow trout and cutthroat trout production facility, a chinook-kokanee hatchery facility and a no action alternative were other alternatives studied prior to selecting the proposed action (See page 50 (*Alternatives to the proposed action 10.0*). Additionally, Scholz et.al. (1985) includes an assessment of different resource alternatives.

ISRP Comment:

The hatchery alternative was selected as preferred without an adequate analysis of whether enough adult cutthroat trout would survive to enter the fishery (and where desired, reproduce). This was done despite the presence of many large red flags waving in the reports from field studies produced by project staff.

- **rationale for the proposed project;**

Declining resident fish populations (identified as unique populations) coupled with habitat impacts associated with decades of urbanization, conversions of forested lands to agricultural uses, and changes in lake conditions related to the construction of the Post Falls Dam have supported the rationale for a project of this magnitude (See page 3 (*Project Rationale 1.0*)).

ISRP Comment:

The lake fish community seems to be the primary reason for the declining cutthroat trout populations. Alteration of stream channels is no doubt contributing to the decline, but these effects seem to be overwhelmed by conditions in the lake for cutthroat trout. Are there no possible interventions in the lake to rid it of exotic species and shallow warm habitats that would tend to restore habitat for adfluvial cutthroat?

- **how the proposed production project will maintain or sustain increases in production;**

At full production, the CDA trout facility is conservatively designed to hold a maximum of approximately 247,600 cutthroat (23,780 pounds) at various sizes and ages (See page 30 (*Table 8*)). Research/M&E component will allow for adaptive management strategies through time.

ISRP Comment:

There is no convincing case that this project, even if conducted via an adaptive management strategy, is likely to meet its goals.

- **the historical and current status of anadromous and resident fish in the subbasin;**

Current distribution and abundance of westslope cutthroat trout appear to be severely restricted when compared to historical conditions. Westslope cutthroat trout are now believed to persist in only 27% of their historical range. Rieman and Apperson (1989) estimated that populations considered as “strong” (greater than or equal to 50% of historical potential) by Idaho Department of Fish and Game (IDFG) remained in only 11% of the historical range within the State of Idaho. Currently only 4% of the existing populations are not threatened by hybridization with non-native salmonids (Rieman and Apperson 1989).

Large and diverse cutthroat trout populations remain in heavily-forested upper elevation portions of the St. Joe and Coeur d’Alene River basins. However, cutthroat populations in low elevation tributaries of Coeur d’Alene Lake have been severely impacted by cumulative impacts of habitat ecological community changes (See pages 16-18 (*5.2 Status*)).

ISRP Comment:

The ISRP agrees with this observation.

- **the current (and planned) management of anadromous and resident fish in the subbasin;**

Since 2000, Idaho State regulations have limited the number of cutthroat harvested in the St. Joe and CDA systems to two per day and none between 8 and 16 inches (See page 28 (*Fishing and Fish Management 5.5.6*)). The Coeur d’Alene Tribe has cooperatively adapted similar regulations on waters managed exclusively by the Tribe. Current and future harvest management plans are described on page 46 Section 8 *Harvest Plan*.

ISRP Comment:

The approximate annual harvest of cutthroat trout on CDA Lake was not indicated. The harvest plan contains little detail about how the harvest pressure induced by the hatchery-produced fish will be kept off wild fish

- **consistency of proposed project with Council policies, National Marine Fisheries Service recovery plans, other fishery management plans, watershed plans and activities;**

The consistency of the proposed project with the aforementioned entities is described in pages 46-49 (See *Management Context 9.0-9.3*).

ISRP Comment:

Some elements of the proposal (e.g., stocking catchables) and supplementation with hatchery fish may cause further distress for the wild spawning populations.

- **potential impact of other recovery activities on project outcome;**

None identified.

ISRP Comment: OK.

- **production objectives, methods and strategies;**

Table 9 displays the cutthroat trout production schedule (See page 29 (*Production Capacity 6.2*)). Release objectives are discussed in section 6.1(See page 29).

ISRP Comment: No comment.

- **brood stock selection and acquisition strategies;**

Sources of hatchery broodstock will be developed consistent with program fishery and conservation goals based on fish availability and a careful benefit risk analysis (See page 30 (*Broodstock Selection and Acquisition 6.3*)).

ISRP Comment:

From what bases will the risk be judged? Who determines what is acceptable risk? The broodstock collection protocol appears to rely on 50 – 100 juveniles per year to be reared in captivity until maturity when they will be used to produce the “supplementation” fish. This looks like a recipe for a pretty small effective population size in each of a number of isolated year-class-populations and maybe a large Ryman-Laikre effect. Could the program monitor pedigrees as a way to estimating these effects?

- **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;**

M&E will also focus on experimentation on the effects of density on life history strategy, inheritance of life history trait expression (resident vs. adfluvial), and the influence of habitat improvement on rearing density (Box 3, Table 12). Annual estimates of population abundance in study streams will direct hatchery release numbers, provide information on the role of habitat on life history selection, and ultimately provide programmatic direction for the hatchery regarding stock selection and breeding matrices. These activities will provide a framework to assess the

impact of management actions on the abundance, distribution, and ultimately harvest of cutthroat trout in the Coeur d'Alene Lake basin. To measure the impact of management actions, the change in abundance of cutthroat trout will be monitored over the next four generations, or approximately 15 years (See pages 38-39 (*Resident-Adfluvial Interactions 7.2.3; Limiting Life Stages and Factors 7.2.4*)).

ISRP Comment:

The premise in these studies is that there is unused “carrying capacity” for cutthroat trout. Data presented in CDA Annual Reports suggest that premise is incorrect making these experiments irrelevant. The carrying capacity of the Lake seems to be ignored

- **production profiles and release strategies;**

Annual production of cutthroat fingerlings and adults will require separate raceways (See page A-10; *Production Raceways*)).

ISRP Comment: *No comment.*

- **production policies and procedures;**

Operations will closely adhere to policies articulated in the Northwest Power Planning Council's (NPPC) Artificial Production Review (See page 9 (*Production Policies 3.1*)). Box 2, also on page 9, summarizes the policies to guide the use of artificial production.

ISRP Comment: *No comment.*

- **production management structure and process;**

(See page 10 (*Implementation Strategy 3.2*)).

ISRP Comment: *No comment.*

- **related harvest plans ;**

The harvest plan's emphasis is to optimize conditions for expansion of wild stocks, while upholding a strict wild fish management policy for traditional fishing areas (see page 46 (*Harvest Plan 8.0*)).

ISRP Comment:

Conceptually, this seems appropriate.

- **constraints and uncertainties, including genetic and ecological risk assessments and cumulative impacts;**

Ten limiting factors and critical uncertainties have been identified in Box 1 (See page 7 (*Limiting Factor Evaluations*)).

ISRP Comment:

Existing information suggests that “carrying capacity” of the system for cutthroat trout has been drastically reduced. For the project to have any real chance for success, food and space resources for cutthroat trout have to be re-established and maintained. Given the present conditions, stocked cutthroat trout will serve only intense, short-term fisheries and the large populations of predators and competitors in the lake.

- **monitoring and evaluation plans, including a genetics monitoring program;**

(See page 36 (*Core Monitoring Program 7.1*)).

ISRP Comment:

Monitoring plans should include identification of the change to be monitored and, if deleterious, how much change is acceptable. These determinations along with the level of confidence desired in the assessment (at some future date) must all be considered in determining sample sizes and whether the required sampling is even possible and, if so, at what level of effort.

The Research Monitoring and Evaluation plan, again, seems not to deal with the critical uncertainty of whether the Lake has ecological capacity for more cutthroat trout. What will the effect of hatchery releases be on the pike population and on the resulting predation effect on wild cutthroat? As for the stream habitats--Will stream population assessments based on index sites rather than on randomized samples be reliable? Can fishery benefits from different supplementation strategies be identified without marking or tagging? Finally, shouldn't there be a genetics monitoring program that evaluates reproductive success and supplementation effects on wild populations using genetic parentage analysis?

- **conceptual design of the proposed production and monitoring facilities, including an assessment of the availability and utility of existing facilities;**

Conceptual drawings can be located in Appendix A.

ISRP Comment: *No comment.*

- **cost estimates for various components, such as fish culture, facility design and construction, monitoring and evaluation, and operation and maintenance.**

Cost estimates are located on pages A-20 through A-23; the total estimated cost for the hatchery facility is \$3,685,572.00.

ISRP Comment:

For that cost, how many adult cutthroat trout produced would be caught each year by tribal fishers and how many are allowed to spawn?

ATTACHMENT 2: Questions Identified in the September 1997 Council Policy Document for FY98 Project Funding

- **Has the project been the subject of appropriate independent scientific review in the past? If so, how has the project responded to the results of independent review?**

The Coeur d' Alene Hatchery has been peer reviewed by the ISRP and most recently by the Interdisciplinary Team. The previous 3-Step process review documentation can be found electronically in the Step 1 submittal package appendix. The Coeur d'Alene Tribe feels that all concerns described by entities including the NPPC and the ISRP have been taken into account. Additionally, the Tribe assembled a Team of Experts in ecology, supplementation and artificial production to provide the best solution to the Tribes harvest needs. This can be found in the newly revised master plan.

ISRP Comment:

Previous ISRP concerns have not been addressed. The ISRP still fails to see any defense of the notion that the Lake has available habitat for hatchery trout. It still seems, even with the panel of experts, that the project is based on an unsupported assumption that hatchery trout will support an intense fishery at no detriment to wild fish. Finally, the project's Interdisciplinary Team is not an independent reviewer. Previous ISRP reviews have generally been critical of the project and its assumptions.

- **Have project sponsors demonstrated adequately at earlier stages that the project is consistent with the Council's policies on artificial/natural production in Section 7 (the specific concern of the Panel)? If not, can these points be demonstrated now?**

The updated hatchery Master Plan addresses the Council's policies on artificial/natural production.

ISRP Comment:

Questions concerning the role of density dependence, carrying capacity, and monitoring (statistical power, etc.) have not been addressed. Again, the

presumption is that food and space exist for more trout, but available data raise doubt about that assertion. Density dependent growth and survival issues are not considered in plans for supplementation stocking.

- **Is the final design of the project consistent with any master plan and preliminary design?**

The hatchery is currently at the preliminary stages of design for the facility. The preliminary designs are located in the Master Plan in Appendix A.

ISRP Comment: *No comment.*

- **If not, do the changes raise any underlying scientific questions for further review?**

N/A

ISRP Comment:

If the project were to go forward and ultimately concluded that the only viable option is to operate the hatchery as a “catchable” production facility, the return on investment depends on accessibility of these fish to a highly intense fishery. Accessibility of these fish and the potential for an adequate fishery are unknown. If catchables were to be stocked in lake tributaries, their accessibility would be known, the character of the fishery may be predictable, but the impact associated with catch and release of wild fish and the genetic impact of the stocked fish are unknown.

- **Has information about the project or its purposes changed in such a way to raise new scientific concerns?**

No

ISRP Comment:

If it becomes a catchable program, questions concerning the impact on wild fish associated with catch and release and the genetic impact of the stocked fish are unknown.

- **Has the underlying science or the way it is understood changed so as to raise new scientific issues?**

No

ISRP Comment:

Questions remain regarding density effects, carrying capacity (productivity), and habitat requirements as they relate to the welfare of cutthroat trout in the basin.

- **How technically appropriate are the monitoring and evaluation elements of the project?**

See section 5.3 of the master plan developed by the Interdisciplinary Team.

ISRP Comment:

There is no discussion of the statistical requirements for successful monitoring, and no comparison of these requirements to that possible in this study. The stocking trials may provide some useful information, but it will be limited in value by the “paired stream” approach, and the results will not be applicable across a range of stocking densities. Also can the paired stream approach provide useful data if the pairs aren’t replicated?

- **Are there ways to obtain the same production benefits with facilities that are lower in cost or less permanent, should monitoring and evaluation later indicate that the effort be abandoned?**

This issue was discussed by the Interdisciplinary Team. Final conclusions and recommendations can be found within the updated hatchery Master Plan.

ISRP Comment:

If it is concluded that a catchable program is a viable approach, it might be worthwhile collaborating with the existing Idaho program on the lake.

ATTACHMENT 3: Program Language Identified by the ISRP

- **Measure 7.0D: Comprehensive environmental analysis assessing the impacts on naturally produced salmon of hatchery produced anadromous fish.**

Measure 7.0D of the Council’s 1994 Fish and Wildlife Program calls for a comprehensive environmental analysis assessing the impacts on naturally produced salmon of hatchery produced anadromous fish. The primary question we would like to have addressed with regard to the project is, does the environmental assessment adequately deal with the question of interactions of hatchery-produced salmonids and naturally spawning salmonids and steelhead in the Columbia River Basin? If so, how? If not, what are the potential or posited interactions and impacts?

The final EA will discuss interactions with naturally produced salmonids. However, the revised Master Plan takes this into account with additional changes placed as conditions to the plan by the IRSP. The impacts to native stocks are expected to be minimal. The concept is to encourage mating on an experimental basis of f_1 hatchery progeny with native populations within the system with the intent of producing a self-sustaining fishable population within the project area. Numbers of hatchery fish allowed to pass into primary spawning areas will be monitored such that the hatchery population does not exceed the wild population. Catchable sterile releases within the project are also contemplated, with the intent of alleviating the issue of interactions of hatchery and wild fish on the spawning grounds.

ISRP Comment:

Issues of catch-and-release effects on wild fish, and density dependent effects on growth and survival in supplementation stocking have not been adequately assessed.

- **Measure 7.1A: Evaluation of carrying capacity and limiting factors that influence salmon survival.**

Measure 7.1A of the Council's 1994 Fish and Wildlife Program calls for a basin-wide study on the ecology, carrying capacity, and limiting factors that influence salmon survival. The primary question we would like to have addressed with regard to this measure is, how does the project intend to address the issue of carrying capacity within the watershed(s) into which fish will be placed? Do these fish originate from the most appropriate native stock? Specifically, how will the artificial production which is proposed, impact natural production? What are the impacts on mainstem and ocean harvest? How are these impacts addressed?

This information can be found in the supplementation feasibility report as well as the master plan. Supplementation efforts are scheduled for times during natural emigration from the targeted tributaries to the lake. This action poses less likelihood of displacement of natives within the specific system because interaction with wild fish occurs during a time when the populations are less likely to be habitat limited. Stocking efforts are also planned into paired systems where the overall interaction can be monitored and evaluated for future adaptive management strategies. The release of migrating juveniles and catchable sized fish will alleviate risks associated with rearing habitat limitations. There is little risk or acceptable amounts of risk associated with the carrying capacity of the lake.

ISRP Comment:

If the productivity of the lake for cutthroat trout has been severely limited by the exotic species, how can the limited resources presently available to the wild cutthroat trout be shared with hatchery fish at "little risk" to the wild?

- **Measure 7.1C: Collection of population status, life history and other data on wild and naturally spawning populations of salmon and steelhead.**

Measure 7.1C calls for the collection of population status, life history and other data on wild and naturally spawning populations of salmon and steelhead. The primary question we would like to have addressed with regard to this measure, especially with regard to listed species is, what biological baseline information on naturally spawning populations of salmon and steelhead have been collected, and what high priority populations and "provisional population units" have been identified? Does this baseline information include a profile on the genetic and morphological characteristics of wild and naturally spawning populations? What characteristics are to be maintained by management actions? What are the limiting factors for wild and naturally spawning populations? What is the natural carrying capacity for the identified populations? What monitoring of identified populations of salmon and steelhead is identified as part of the project? Are these efforts being coordinated with the USFWS? NMFS? If so, how?

This information was addressed in the supporting documentation and outlined in Attachment 1 of this document. Baseline information has been completed for the targeted watersheds and been recorded in BPA reports since 1990. The Baseline data information

includes genetic information of the species in question and the goal is to produce progeny with identical characteristics as those of wild/natural produce fish.

At this time fish densities are believed to be extremely depressed in the targeted tributaries with imminent risk of extirpation and it is believed that by the time the Coeur d'Alene Tribe is able to release fish, the tributaries will be able to support many additional fish.

All activities are coordinated with efforts of the USFWS regarding any ESA issues.

ISRP Comment:

Some past annual reports were provided. These data and comments in the text seem to make the case that this project is misguided. Cutthroat trout in the lake seem to be experiencing determinant growth suggesting that resources are limited at least at the sizes desirable for recruitment to the fisheries. Stream population densities are variable among streams, but were found to be equal to or greater than densities in other streams in the region.

- **Measure 7.1F: Systemwide and cumulative impacts of existing and proposed artificial production projects on the ecology, genetics and other important characteristics of the Columbia River Basin anadromous and resident fish.**

Measure 7.1F calls for a study to address the system wide and cumulative impacts of existing and proposed artificial production activities on the ecology, genetics and other important characteristics of Columbia River Basin anadromous and resident fish. This study is to be coordinated with the genetic impact assessment of Columbia River Basin hatcheries called for in measure 7.2A.2 of the Council's program. How does the project Final Environmental Assessment address the direct, indirect and cumulative effects of the proposed project production activities on anadromous and resident fish? Have those effects commonly associated with cumulative hatchery releases -- density dependent, competition, predation, disease transmission and genetic effects on other fish in the mainstem and oceanic environments been addressed? If so how? Have the genetic effects of project production on fish within and outside the Columbia River Basin been specifically addressed?

This information was addressed in the master plan as well as other supporting documentation. The EA or EIS will address direct, indirect and cumulative effects of the proposed project. No system wide effects are expected to be incurred. Effects will be contained within the confines of Coeur d'Alene Lake and through monitor and evaluation of activities of the facility changes will be made according to adaptive processes

Genetic concerns are addressed in the Master Plan see Knudsen and Spruell 1999.

ISRP Comment:

Available data support the proposition that species interactions (density dependent, predation, and competition) are limiting productivity of the lake for cutthroat trout. This project is likely to fail because of these effects, yet they have received inadequate attention in the formulation of the proposed strategy for increasing trout abundance in the system.