Council Document ISRP 2000-6

Independent Scientific Review Panel for the Northwest Power Planning Council

Review of the Northeast Oregon Hatchery Spring Chinook Master Plan

Step One Review of the Northwest Power Planning Council's Three-Step Review Process

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ISRP Review of the Northeast Oregon Hatchery Spring Chinook Master Plan

Review Process

On April 21, 2000, the Northwest Power Planning Council requested that the ISRP review the Northeast Oregon Hatchery Spring Chinook Master Plan. The review is a Step One review under the Council's Three Step Review Process. The ISRP's review is provided below in two sections: 1) Recommendations and Findings, 2) Specific ISRP Reviewer Comments. The Specific Reviewer Comments are incorporated in the three-step review template submitted by the Nez Perce Tribe.

Section 1. Recommendations and Findings

The Northeast Oregon Hatchery Spring Chinook Master Plan is one of the better master plans reviewed by the ISRP as part of the Three-Step Process. The report reads well and is logically constructed. The materials submitted adequately address the technical questions raised in the Step One Review, and the project is satisfactory to proceed to Step Two.

However, the reviewers identified several issues that the project needs to address as it further develops.

1. Although materials on the monitoring and evaluation conceptual framework submitted for this stage are adequate, future submittals need to include a more complete and detailed monitoring and evaluation plan. The plan should include long term storage of data and meta-data with dates for release to the public. This plan should include comprehensive monitoring and evaluation of ecological effects and outcomes to justify concerns and assumptions about wild fish, resident fish, and carrying capacity. The detailed monitoring and evaluation plan should also benefit from additional peer-review after it is developed. (Attachment 1, Question 20, also 9, 14, 16; Attachment 2, Questions 5, 7; Attachment 3, Measures 7.0D, 7.1A, 7.1C, 7.1F; Attachment 5, Questions 2 and 8)
2. The materials on limiting factors raised concerns about in-basin conditions of lower sections of the rivers, particularly high temperatures and low flows during the late summer. The project should show better linkage to habitat improvement projects that address these limiting factors. (Attachment 1, Question 3; Attachment 3, Measures 7.1A and C)
3. Linked to the limiting factors recommendation were reviewer's concerns that the late summer high temperatures and low flows, particularly in the Lostine River, were potentially adversely impacting a remnant late-run of adult chinook salmon (springs or summers?; pp. 147-148 of Master Plan). This group of fish may represent an

important diversity component in the Grand Ronde chinook stock that is not being adequately addressed by the Master Plan and its proposed actions.

4. We had similar concerns over the late-summer high water temperatures and low summer and winter flows and their potential to adversely affect rearing of juvenile chinook at the proposed Mark's Ranch site in the lower Imnaha River. Use of ground water may reduce the concern, but may also reduce the effectiveness of the proposed NATURE's strategies. Apparently, since the Master Plan was developed an additional site upstream near the confluence of Summit Creek has been examined and initial results suggest that further consideration of this site for the lower river culture facility may be warranted (B. Ashe, Personal communication to R. Williams, 11 July 2000).
5. Although harvest is not an immediate factor, it is a long-term goal of the project and a long-term plan should be developed that ensures compatibility with recovery goals. (Attachment 1, Questions 1, 2, 4, 9, 18; Attachment 3, Measure 7.1A; Attachment 5, Question 9)
6. It is good that the project will incorporate some elements of NATURE's rearing such as low fish densities, but it is not clear what other NATURE's strategies will be employed (e.g. predator avoidance and exercise programs were not described). Future submittals should better describe the strategies to be used and not used. (Attachment 1, Questions 12, 15)
7. We recommend using the Imnaha Satellite (Gumboot) facility to hold, spawn, and incubate chinook eggs to the eyed state prior to transport to a rearing site lower in the Imnaha River basin. Eyed eggs will tolerate transport more readily than green eggs. Egg incubation at the Imnaha Satellite facility will likely require development of a ground water supply, however, egg incubation does not require a large water volume.
8. The Master Plan should better describe whether the proposed improvement to Lookingglass Hatchery will alleviate the high risk of fish production loss due to winter icing and heavy reliance on well TW2, with no back-up. These risks were described as significant problems in the past, and the reviewers saw no indication that these risks would not continue to pose major production problems. (Attachment 1, Question 19)
9. Downstream mortalities associated with mainstem passage and other downstream habitat constraints (e.g., ocean conditions) are potential limiting factors. The limiting factors effect whole system concerns. The Master Plan demonstrates an awareness of these larger-scale limiting factors, but does not tie the project goals with these factors as closely as it should for the captive broodstock component.

   While it falls beyond the responsibility of the Nez Perce Tribe and this Master Plan to resolve these issues, they need to be addressed before captive broodstock programs can be effective. The region needs to carefully consider the consequences of supporting local projects that require large-scale regional supporting actions that may or may not occur.

It appears from the Master Plan that the captive broodstock effort could continue for perpetuity. However, captive broodstock strategies have inherent design constraints. Captive brood strategies should be short-term. The longer this project proceeds, the less likely the captive broodstock element will be a success. Further development of the Master Plan and Stage 2 and 3 documents need to provide specific timelines to determine success or failure of the captive broodstock strategy.

Section 2. Specific ISRP Reviewer Comments

This section is adapted from the NEOH Three-Step submittal: Appendix C (Independent Scientific Review Panel Questions and Artificial Production Review Requirements). Each Three-Step question is followed by a reference to a section of the master plan or other supporting documents where the question is addressed. This response is followed by the ISRP's review comments on whether the master plan and supporting documents adequately address the Three-Step question.

ANSWERS TO ATTACHMENT 1:

Program Language Regarding Master Planning Requirements

This information is also contained in Section 1.4 of the master plan document (see box).

NPPC Question 1: Project goals.

Master Plan Response: See Section 3.1.

ISRP Reviewer Comments: The short-term, mid-term and long-term goals are appropriate and clearly stated, as is their time-tiering. Redirection of project from mitigation focus to that of conservation/restoration seems appropriate and necessary in view of SARs over past decade. However, the fact that portions of the Grande Ronde other than the Lostine are not directly included in the project goals and objectives might prove to be cumbersome in future (and delay efforts to preserve/restore those other stocks).

The ability of the project to meet the goals depends critically on actions taken elsewhere in the Basin (which is noted in the Master Plan, in discussions of limiting factors). Thus, support of this project, which seems quite sound in addressing factors under its direct control, should entail a commitment to address limiting factors outside of the Grande Ronde and Imnaha areas in support of meeting the local project goals.

NPPC Question 2: Objectives.

Master Plan Response: See Section 3.1

ISRP Reviewer Comments: The objectives are clear and apparently consistent with prior planning efforts. The objectives support the goals, though several cannot be met through actions of this project alone. Smolt to adult survival, in particular, appears to be a strong and critical limiting factor that likely requires other action if this project is to succeed in meeting its goals.

One long-term goal is to "utilize natural and artificial production to provide benefits expected from the LSRCP…"; why is artificial production a long-term objective. If preservation and restoration of stocks can be achieved, as per goals, then the long-term goal could perhaps be met without artificial production, which would remove concern over long-term negative impacts of the hatchery program.

The discussion of limiting factors in Chapter 6 suggests that larger system issues must be solved for short and mid-term goals to be met, and that solving these could lead to achievement of the long-term goals without concern over possible negative effects (genetic, environmental, biological). A few of the goals need work to establish compatibility: e.g., what harvest is consistent with recovery? Many genetic concerns are addressed in detail in the two Genetic Risk Assessments, but the ultimate interface of planned activities with harvest is not clear. That harvest is a desirable goal is clear, but the compatibility of different hatchery operations with different harvest patterns should be explored so that we understand clearly what harvest can be supported by what recovery conditions and what genetic or other consequences. Harvest is not an immediate factor, given the low numbers of fish, but the potential for this long-term goal to be realistically achieved needs to be developed sooner, not later.

NPPC Question 3: Factors limiting production of the target species.

Master Plan Response: See Chapter 6

ISRP Reviewer Comments: In general, this section was well presented, comprehensive, and informative. Clearly many limiting factors involve conditions outside of the two basins of concern. Success of the project will require that at least some of these be addressed, and that will require action from outside of the NEOH spring chinook program.

In-basin conditions are described as very good in some areas, but it was difficult for the reviewers to assess whether serious problems exist within the two basins that significantly constrain fish production. For example, spawning and incubation are listed as fair to poor for lower ten miles of the Lostine. Is this critical, or do good conditions upstream negate the impact?

Specifically of concern are late-season conditions in the lower reaches of several rivers, where low flows and high water temperatures appear to be problematic. These areas require more attention. Although many habitat improvement projects are listed as underway, the reviewers cannot tell how well they resolve critical issues for project success. As small as these populations are, and keeping remaining diversity a critical point in these populations, reviewers expected more in the Master Plan on those critical habitat bottlenecks.

Of particular concern are the late-returning adults that are mentioned several times throughout the Master Plan documents and appear to be an important genetic component of the populations. It looks like they are presently being hit very hard by these late summer ecological conditions. The Master Plan does not adequately address the status of

this group of fish, the impacts of the lower river ecological conditions at the time of adult return, or the actions that might be taken to manage this group of fish and their habitats.

NPPC Question 4: Expected project benefits (e.g., gene conservation, preservation of biological diversity, fishery enhancement and/or new information).

Master Plan Response: See Section 1.2. See also Section 10 permit applications (BIA 1998, ODFW 1996, ODFW 1998b in Appendix A).

ISRP Reviewer Comments: Clear and appropriate, but it seems unfortunate that these proposed benefits are not being extended to other stocks in the Grande Ronde. As mentioned above, the plans for and compatibility of long-term harvest need to be developed.

NPPC Question 5: Alternatives for resolving the resource problem.

Master Plan Response: See Section 3.3.

ISRP Reviewer Comment: The preferred alternative is well justified in the plan and associated materials.

NPPC Question 6: Rationale for the proposed project.

Master Plan Response: See Chapters 2 and 3.

ISRP Reviewer Comment: OK. As above.

NPPC Question 7: How the proposed production project will maintain or sustain increases in production.

Master Plan Response: See Sections 4.1.12 and 4.2.11.

ISRP Reviewer Comment: OK. Rationale is clearly given. It should be evaluated as the project develops. It will be critical to evaluate whether smolt-adult survival is improved by the techniques to be adopted. For Imnaha, broodstock would no longer be transported 3-4 hr to Lookingglass Hatchery, a major improvement. Use of that hatchery for rearing, with its major winter icing problems, will be now avoided for supplementation fish but not for captive broodstock program fish.

NPPC Question 8: The historical and current status of anadromous and resident fish in the subbasin.

Master Plan Response: See Section 2.1.1 and Chapter 5.

ISRP Reviewer Comment: Well-described. Lots of interesting information here. It appears that most of the problem is external to the basins. For example, spring chinook runs in both Lostine and Imnaha have precipitously declined, with very low SAR's in last two decades despite little identified decline in spawning and rearing conditions within the watersheds. This suggests that more outside action is needed very soon to support this project.

NPPC Question 9: The current (and planned) management of anadromous and resident fish in the subbasin.

Master Plan Response: See Chapters 4, 5, and 6.

ISRP Reviewer Comment: Clearly presented for anadromous fish. Management under LSRCP to date has not successfully been able to maintain SARs even close to a sustaining level. There is very little mention of resident fishes, except for mention of bull trout in Catherine Creek. The project needs more attention over the long run to other species and to harvest.

NPPC Question 10: Consistency of proposed project with Council policies, National Marine Fisheries Service recovery plans, other fishery management plans, watershed plans and activities.

Master Plan Response: See Table 1-1, and Table 1-3 and Chapter 6.

ISRP Reviewer Comment: Well-described in Master Plan and in M&E Conceptual Framework (Appendix D); inconsistencies were not evident.

NPPC Question 11: Potential impact of other recovery activities on project outcome.

Master Plan Response: See Table 1-3 and Chapter 6.

ISRP Reviewer Comment: The reviewers did not find this discussed directly, though discussions of limiting factors and notes of needed smolt-to-adult survival rates suggest that mainstem passage must be improved for this project to meet any but its short-term goals.

NPPC Question 12: Production objectives, methods and strategies.

Master Plan Response: See Chapter 4.

ISRP Reviewer Comment: A combination of supplementation, using proposed new facilities and Lookingglass Hatchery, and captive broodstock, using Lookingglass, Bonneville, Manchester hatcheries. It is not clear what elements of the full complement of NATURE's strategies they will employ (e.g. predator avoidance and exercise programs were not described).

NPPC Question 13: Broodstock selection and acquisition strategies.

Master Plan Response: See Chapter 4.

ISRP Reviewer Comment: OK. Many considerations are developed in the Genetic Risk Assessments. If collection weirs are redesigned to collect adults from early portion of run, broodstock will be more representatively collected. Only endemic stock should be used.

NPPC Question 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.

Response: See Sections 4.1.12 and 4.2.11.

ISRP Reviewer Comment: Smolt release seems appropriate. Target level of numbers released, adjusted in future as necessary, also seems reasonable. Ecological effects and outcomes need careful M&E to justify concerns and assumptions about wild fish, resident fish, and carrying capacity.

NPPC Question 15: Production profiles and release strategies.

Master Plan Response: See Chapter 4.

ISRP Reviewer Comment: OK. In general the move to more natural conditions and local release of smolts is well justified. Rearing would be conducted at low fish densities but other more natural rearing activities are incompletely described on p 75 & 79.

NPPC Question 16: Production policies and procedures.

Master Plan Response: See Chapter 4.

ISRP Reviewer Comment: OK. Proposed policy to return adult carcasses to the upper watershed of both streams is a positive change. Again, M&E will tell over the long run.

NPPC Question 17: Production management structure and process.

Master Plan Response: Section 3.4.3.

ISRP Reviewer Comment: Pretty sketchy description in this section. Details of the process were not presented and will need to be developed, if they are not already in place. There needs to be good cooperation and coordination between NPT and ODFW, something that has recently been problematic, at least at higher administrative levels.

NPPC Question 18: Related harvest plans.

Master Plan Response: See Sections 4.1.1 and 4.2.1.

ISRP Reviewer Comment: Incorrect section references given here. The harvest plan is not described in much detail, but looks reasonable. However, the numbers of returning adults are so low that any harvest may have a significant impact. Plans to make harvest compatible with other recovery and conservation goals should be developed so that earlier actions are compatible with long-term plans or that irresolvable inconsistencies are recognized and accepted early.

NPPC Question 19: Constraints and uncertainties, including genetic and ecological risk assessments and cumulative impacts.

Master Plan Response: See Support documents, Neeley et al. 1993 and Neeley et al. 1994, Section 10 Permit applications in Appendix A, LSRCP Biological Assessment (USFWS 1998), NMFS Biological Opinion (NMFS 2000), and conceptual framework for monitoring and evaluation plan in Appendix D.

ISRP Reviewer Comment: How would proposed use of Lookingglass Hatchery compare with current use? Is there not a high risk of fish production loss due to winter icing and heavy reliance on well TW2, with no back-up? These risks were described as significant problems in the past. Reviewers see no indication that that these risks would not continue to pose major production problems. It is not evident that the proposed improvements will adequately address those problems.

NPPC Question 20: Monitoring and evaluation plans, including a genetics monitoring program.

Master Plan Response: See Sections 4.1.13 and 4.2.12 and Appendix D.

ISRP Reviewer Comments: Neely et al 1993 (cited several time sin Master Plan) described adult migration patterns that extended throughout the summer and into the fall, probably reflecting the presence of a somewhat continuous migration from spring to summer to fall chinook. Neely et al. and Thompson and Haas (1960) describe these later returning fish in the Grande Ronde and the possibility that more than one genetic subpopulation exists. However, surveys by Ken Witty et al. in the mid-1960s, were unable to locate them.

M&E plans did not include an attempt to assess the status of late returning adults in the basin at present. First-winter survival and knowledge of wintering locations used by wild fish also appear critical but are not strongly addressed in M&E plan.

The list of M&E activities are appropriate, but the methods of their M&E activities are not described in enough detail to evaluate scientifically. The M&E specifics need to be developed and reviewed. The reports in Appendix (e.g., Section 10 applications) and Genetic Risk Assessment documents suggest useful monitoring and evaluation is being done and information needs are being developed and considered.

NPPC Question 21: Conceptual design of the proposed production and monitoring facilities, including an assessment of the availability and utility of existing facilities.

Master Plan Response: See Chapter 3.

ISRP Reviewer Comment: Generally OK. However, the SRT 1999 (cite this way rather than as Brannon et al. 1999) placed significant emphasis on supplementation facilities needing to mimic ambient stream conditions (water quality, temperature, etc.) as a way to maintain ecological adaptation in the hatchery-reared fish. Clearly the simplest method to achieve this is to use ozone-treated surface water at the incubation and rearing facilities. In periods of low summer flows and elevated stream temperatures, the surface water might be mixed with ground wellwater to achieve the necessary aquacultural conditions.

This comment applies particularly to the Lundquist site in the Lostine subbasin.

NPPC Question 22: Cost estimates for various components, such as fish culture, facility design and construction, monitoring and evaluation, and operation and maintenance.

Master Plan Response: See Sections 3.4.1.2 and 3.4.2.2.

ISRP Reviewer Comment: Did not judge.

ANSWERS TO ATTACHMENT 2:

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

NPPC Question 1: 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?

Master Plan Response: See Sections 4.1 and 4.2.

SEE FY2000 ISRP Review Comments attached at end

ISRP Reviewer Comment: The project has had substantial review and has responded thoughtfully to that review. The project Master Plan and M&E Conceptual Plan also reflect familiarity with the literature, controversies, and uncertainties associated with supplementation as discussed in other major reviews and documents (e.g., RASP 1992 and *Return to the River*).

NPPC Question 2: 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?

Master Plan Response: See responses to Attachment 5, Table 1-3, and Chapters 3 and 4.

ISRP Reviewer Comment: Adequately addressed.

NPPC Question 3: Is the final design of the project consistent with any master plan and preliminary design?

Master Plan Response: This question is not applicable. This master plan submittal is to fulfill Step 1 (conceptual planning). Final design will not occur until after the master plan document is approved, and preliminary design and NEPA phase is completed and approved.

ISRP Reviewer Comment: Not applicable.

NPPC Question 4: If not, do the changes raise any underlying scientific questions for further review?

Master Plan Response: Not applicable.

ISRP Reviewer Comment: Not applicable.

NPPC Question 5: Has information about the project or its purposes changed in such a way to raise new scientific concerns?

Master Plan Response: No new information about the project or its purposes has developed to raise new scientific concerns.

ISRP Reviewer Comment: The data on salmon populations and salmon recovery, resident fish, salmon genetics, captive brood technology, and hatchery practices is very dynamic and new scientific concerns will frequently arise and need consideration. The project should be prepared for this and should incorporate the idea actively into their M&E.

NPPC Question 6: Has the underlying science or the way it is understood changed so as to raise new scientific issues?

Master Plan Response: No.

ISRP Reviewer Comment: Same as above.

NPPC Question 7: How technically appropriate are the monitoring and evaluation elements of the project?

Master Plan Response: Ongoing monitoring and evaluation activities are described in Sections 4.1.13 and 4.2.12. Technical details of these activities are contained in Lower Snake River Compensation Plan annual statements of work (Carmichael et al. 2000). These activities are also described in ESA Section 10 Permit applications (BIA 1998, ODFW 1996, ODFW 1998b) contained in Appendix A. The conceptual framework for the monitoring and evaluation program for the proposed alternative can be found in Appendix D.

ISRP Reviewer Comment: The supporting materials and appendices suggest these are very good, but specific M&E is not clearly presented in itself. The conceptual framework for the monitoring and evaluation program for the proposed alternative (found in Appendix D) describes much future work that will be critical to determining success (or failure) of the NEOH program. Specifics of the M&E activities will benefit from peer review as they are developed.

NPPC Question 8: 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?

Master Plan Response: Chapter 3 summarizes the potential to utilize other facilities to accomplish this program. The preferred alternative is the only alternative capable of providing facilities that meet the production criteria established by co-managers for these ESA listed populations. This program is being managed under the adaptive management philosophy, with extensive monitoring and evaluation. As M&E results indicate a need for program and facility changes, we will be making adjustments to the program.

ISRP Reviewer Comment: The preferred alternative looks good, though it seems quite possible that actions taken to support achievement of the mid and long-term goals (e.g., improved mainstem conditions and passage, improved local habitat) might allow the production benefits without continuing operation of the facilities or with their use at much lower levels.

As described in the Master Plan, lower cost alternatives do not appear to be feasible. The only point in the plan where a lower cost alternative was discussed, was for the Lundqist site facility in the Lostine, where elimination of the ozone water treatment package was mentioned as a way to cut costs. As noted above, we recommend that the primary water source for this site be surface water, rather than ground well water, so the ozone treatment will be required in order to provide pathogen-free water to the facility.

ANSWERS TO 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.

NPPC Question: 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 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?

Master Plan Response: The environmental assessment for the proposed alternative will be developed during Step 2. However, environmental assessments and biological assessments have been completed for the Currently Permitted Program (see Table 1-3).

ISRP Reviewer Comment: Not really dealt with in the Master Plan. Interactions with wild fish (both chinook and steelhead) are extensively discussed in the Genetic Risk Assessments for Imnaha and Grande Ronde, but not within the NEOH master plan. Certainly it needs further consideration and development as the M&E plan is developed.

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

NPPC Question: 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.

A. 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?

B. Do these fish originate from the most appropriate native stock?

C. Specifically, how will the artificial production which is proposed, impact natural production?

D. What are the impacts on mainstem and ocean harvest? How are these impacts addressed?

Master Plan Response:

A. See Sections 4.1.12 and 4.2.11.

B. See Sections 4.1.1.1 and 4.2.1.2.

C. We anticipate the proposed program will enhance natural production as described in Section 1.2.

D. See Chapter 6. We believe there will be little or no impact to mainstem and ocean fisheries because spring chinook are not harvested at any significant level, presently. Adults produced from this program could contribute to harvest in the future.

ISRP Reviewer Comments:

A = This issue is addressed, and it appears that hatchery production goals would represent a fraction of theoretical natural production. Nevertheless, discussion and consideration of carrying capacity could be more thorough.

B = OK;

C = Certainly M&E will have to carefully evaluate effects of artificial production on natural production. The current data do not suggest that hatchery fish fail to impact wild fish here. So far the data from the Grande Ronde and other supplementation locations seems to indicate that hatchery fish replace, rather than augment, wild fish.

It will be important to evaluate the genetic effects of this project, which attempts to conserve wild fish genetic make-up in hatchery fish. Because the goal of the program is to produce (via artificial production) fish that do not differ from wild fish, then replacement is not seen as problematic. If wild and hatchery-reared fish do differ, which seems to be the crux of the various tests of supplementation, then it does matter. Carefully designed M&E will be required to meaningfully assess this issue.

D = OK, but does not seem a concern yet as simple preservation of rapidly disappearing stocks is the immediate issue and the likelihood of recovery is yet to be determined as the program operates.

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

NPPC Question: 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.

A. 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?

B. Does this baseline information include a profile on the genetic and morphological characteristics of wild and naturally spawning populations?

C. What characteristics are to be maintained by management actions?

D. What are the limiting factors for wild and naturally spawning populations?

E. What is the natural carrying capacity for the identified populations?

F. What monitoring of identified populations of salmon and steelhead is identified as part of the project?

G. Are these efforts being coordinated with NMFS? If so, how?

Master Plan Response:

A-B. See Chapter 5. Also natural escapement, life history, genetic, and production baseline information can be found in (Waples, *et al.*, 1995, Keefe, *et al.,* 1995, Jonasson, *et al.,* 1996, Grande Ronde Subbasin Plan, GRA, 1994).

C. See Chapter 4. Also refer to Captive Broodstock Section 10 permit application, Mod Permit 1011, ODFW FY99 Captive Brood BPA proposal, and NPT FY99 BPA Proposal.

D. Limiting factors are discussed in Chapter 6. More information can be found in the Imnaha Subbasin Plan, the Grande Ronde Subbasin Plan, Tribal Recovery Plan, Captive Broodstock application, Mod Section 1011, *U.S. v. Oregon* Spring Chinook Production Plan, and Grande Ronde EDT.

E. See Sections 4.1.12 and 4.2.11.

F. Ongoing monitoring and evaluation activities are described in Sections 4.1.13 and 4.2.12. The conceptual framework for the monitoring and evaluation plan for the proposed alternative is in Appendix D.

G. The production program described in this master plan is for spring chinook salmon listed as threatened under the Endangered Species Act. Activities involving artificial propagation and monitoring and evaluation are described in ESA Section 10 permits.

ISRP Reviewer Comment: All items either addressed in Master Plan or identified in earlier reviewer comments, except as noted above that specifics in the M&E plan have yet to be developed. Peer review should play a role in their development (e.g. subsequent Step reveiws).

Specifically:

A, B: OK

C: OK, but only longer-term operation with M&E will show what is maintained.

D: OK, but continuing attention needed to mainstem processes which appear to be critical limiting factors

E: Very limited info and varied estimates. Should be looked at more carefully.

F: OK, but needs to be subject to continuing development with peer review.

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.

NPPC Question: 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.

A. How does the projects environmental assessment address the direct, indirect and cumulative effects of the proposed production activities on anadromous and resident fish?

B. 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?

C. Have the genetic effects of the project on fish within and outside the Columbia River Basin been specifically addressed?

Master Plan Response:

A. Not applicable. An environmental assessment of the proposed alternative will be developed during Step 2 of the 3-Step process.

B. The affects of fish releases from the production has been evaluated through the development of Section 10 Permit applications (see Appendix A). An assessment of effects associated with cumulative hatchery releases are contained in the LSRCP Biological Assessment (USFWS 1998).

C. Regarding genetic effects, see response to questions under Measure 7.1A. Based on our previous experience with supplementation in the Imnaha Basin and the plan to acclimate all smolts prior to release, we do not expect out-of-basin straying to be a significant problem.

ISRP Reviewer Comment: Adequate at this stage. More detail needed on interactions with other species or stocks over the longer run as part of M&E.

Attachment 5: Policies of the Artificial Production Review, Report and Recommendations (Document 99-15)

1. The manner of use and the value of artificial production must be considered in the context of the environment in which it will be used.

***Master Plan Response*:** See Chapter 2

ISRP Reviewer Comment: Adequate.

2. Artificial production must be implemented within an experimental, adaptive management design that includes an aggressive program to evaluate benefits and address scientific uncertainties.

***Master Plan Response*:** See Appendix D for the monitoring and evaluation conceptual framework.

ISRP Reviewer Comment: So far so good – M&E plan needs further development beyond the conceptual stage.

3. Hatcheries must be operated in a manner that recognizes that they exist within ecological systems whose behavior is constrained by larger-scale basin, regional and global factors.

***Master Plan Response*:** See Chapter 6.

ISRP Reviewer Comment: Master Plan shows an awareness of this – how could they not with the SARs average 0.15, rather than the predicted 0.65. This seems to be the biggest hurdle for project success, but the project itself does not control it and is aware of larger-scale limiting factors/problems. The overall Columbia Basin FWP needs to carefully consider this in supporting projects that require outside supporting actions.

4. A diversity of life history types and species needs to be maintained in order to sustain a system of populations in the face of environmental variation.

***Master Plan Response*:** See Chapter 2

ISRP Reviewer Comment: OK; diversity of types seems to be a major project goal. Diversity of species is minimally considered to date and does not apply very well as the Master Plan is for Spring Chinook. Some discussion of summer chinook and the relationship with spring chinook was included in the Master Plan. Reviewers had concerns about the lack of attention in the Master Plan to late-returning adults in the Lostine system, and to the alleged multiple chinook life histories in the Grande Ronde and Imnaha (suggested by Neely et al 1993 in Genetic Risk Assessment).

5. Naturally selected populations should provide the model for successful artificially reared populations, in regard to population structure, mating protocol, behavior, growth, morphology, nutrient cycling, and other biological characteristics.

***Master Plan Response*:** See Chapters 4 and 5.

ISRP Reviewer Comment: OK for now and considered in design, though minimizing artificial selection for domestication will be tricky with long-term and large-scale hatchery inputs. Natural populations are so low in abundance and so much in jeopardy, that their current characteristics and attributes may not fully represent their potential, or even recent historic characteristics and attributes. Thus, they may not be entirely appropriate as the models by which to measure supplementation effects or benefits.

6. The entities authorizing or managing a artificial production facility or program should explicitly identify whether the artificial propagation product is intended for the purpose of augmentation, mitigation, restoration, preservation, research, or some combination of those purposes for each population of fish addressed.

***Master Plan Response*:** See Chapter 3.

ISRP Reviewer Comment: Adequate

7. Decisions on the use of the artificial production tool need to be made in the context of deciding on fish and wildlife goals, objectives and strategies at the subbasin and province levels.

***Master Plan Response*:** See Table 1-3 and Chapter 6.

ISRP Reviewer Comment: Adequate at the project level. Needs consideration from the larger scale view, as the project depends on mainstem conditions.

8. Appropriate risk management needs to be maintained in using the tool of artificial propagation.

***Master Plan Response*:** See Chapter 4 for discussions on genetic risk management, See Chapter 3 for discussion about facility backup planning, and see Appendix D for conceptual framework of the monitoring and evaluation plan.

ISRP Reviewer Comment: Adequate; further development with specific protocols to be developed in the M&E plan.

9. Production for harvest is a legitimate management objective of artificial production, but to minimize adverse impacts on natural populations associated with harvest

management of artificially produced populations, harvest rates and practices must be dictated by the requirements to sustain naturally spawning populations.

***Master Plan Response*:** See Chapter 4.

ISRP Reviewer Comment: Adequate for now. Harvest is low (tribal subsistence) or non-existent (sport or commercial) within-basin. Lower river harvest may have some impact, while ocean harvest is thought to be very small. Needs development of long-term plans.

10. Federal and other legal mandates and obligations for fish protection, mitigation, and enhancement must be fully addressed.

***Master Plan Response*:** See Table 1-3 and Chapter 2.

ISRP Reviewer Comment: OK; Master Plan provided detailed comments on these relationships.

ISRP FY2000 Comments

ProjectID: 8805301

Northeast Oregon Hatchery Master Plan

Nez Perce Tribe

Short Description: Plan and develop conservation production facilities in the Imnaha and Grande Ronde rivers necessary to implement salmon recovery programs for native, ESA listed, steelhead, spring and fall chinook and reintroduction of coho and sockeye salmon.

Sponsor Funding Request = $1,217,017 / CBFWA Funding Recommendation = $1,217,017

ISRP Response Evaluation:

These two proposals, 8805301 and 8805305, are for participation in the same set of programs by two groups. Their strengths and shortcomings are shared and we provide a single response to the two.

Fund in part. Fund the spring chinook Grande Ronde and Imnaha objectives, which involve some capital modifications to Lookingglass Hatchery. Do not fund the reintroduction efforts or efforts to use local endangered stocks to support harvest.

The response clarifies that part of the requested funding is needed to support the Grande Ronde Endemic Spring Chinook Program, which was presented in several other proposals and recommended by the ISRP as a reasonable test program for captive broodstock approaches to conservation and remediation for threatened or endangered native stocks.

The original proposals were criticized for failing to clearly develop a rationale for their goals and objectives (many of the latter were in fact simply tasks, not biological objectives) which were very broad and general. Most remain vaguely presented and justified. Because alternatives to development of proposed facilities will be addressed in the master plan document, it is impossible to evaluate the scientific merit of the various alternatives until the document is available for review. The Fish and Wildlife Plan does not constitute scientific justification for planning and development for coho and sockeye salmon reintroduction and steelhead supplementation.

Reviewers judged the combination of hatcheries intended to preserve native stocks with supplementation for harvest to be scientifically unjustified and unsound. Current scientific understanding would dictate that genetic conservation of stocks and mass rearing to support harvest are incompatible goals. These stocks should not be used to support harvest, but rather should be used to recover endangered stocks.

The proposed reintroduction efforts also are not scientifically justified, given the presence of the other overriding limiting factors, which are acknowledged in the proposal to be continuing problems. The respondents note that previous research suggests that the prospect for successful introduction are good, but passage mortality and harvest rates under current conditions are too high for natural production to be self-sustaining. This information suggests that if the goal of the proposal is to implement salmon recovery, a

captive brood program will not be successful until the other critical factors affecting salmon persistence are addressed. Stating that a study says that reintroduction has a good chance of “working”, given continuing supplementation, does not remove this concern. Further, the continuing weakness of native stocks in the rivers of concern is likely to be worsened by increasing numbers of hatchery fish of other species.
