Independent Scientific Review Panel
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Memorandum (ISRP 2011-27) **December 21, 2011**

To: Bruce Measure, Chair, Northwest Power and Conservation Council

From: Rich Alldredge, ISRP Chair

Subject: Review of the Fish Accord Proposal: *Habitat Restoration Planning, Design and Implementation within the Boundaries of the Confederated Tribes of the Warm Springs Reservation of Oregon, Lower Deschutes River, Oregon*, #2008-301-00 (revised November 2011)

Background

At the Council's November 17, 2011 request, the ISRP reviewed a revised version of the Confederated Tribes of the Warm Springs Reservation Fish Accord Proposal: Habitat Restoration Planning, Design and Implementation within the Boundaries of the Confederated Tribes of the Warm Springs Reservation of Oregon, Lower Deschutes River, Oregon, #2008-301-00. The proposal describes a program intended to protect, manage, and restore aquatic habitat through planning, design, and implementation of projects directed at factors limiting salmonid and other native fishes' production within the Warm Springs Reservation's streams (Warm Springs River and Shitike Creek watersheds). Projects will target four broad limiting factors including habitat complexity and quantity, fine sediment, water temperature, and altered hydrology.

The ISRP has participated in four review iterations with this proposal. The most recent review was released February 18, 2011 (ISRP 2011-4). In that review, the ISRP found that the proposal did not meet scientific review criteria and listed five items of basic information expected to be addressed in habitat restoration projects:

1. an adequate description of what will be done, including the details of anticipated habitat benefits;
2. identification of focal species and some quantitative expression of how the project would contribute to the species' recovery;
3. an ecological justification of the project, often achieved by citing its importance to successful implementation of the appropriate subbasin plan and by showing linkages with ongoing recovery programs in the area;

4. evidence of landowner cooperation, usually documented by reference to conservation easements and other long-term agreements; and
5. a thorough description of the post-implementation monitoring plan, including the procedures used to verify the project's habitat benefits and biological effectiveness.

In addition, the ISRP had a number of comments that persisted from earlier reviews. The Confederated Tribes of the Warm Springs Reservation (CTWSRO) substantially reworked their proposal in response to the ISRP's suggestions. The ISRP's review of the reworked proposal follows below.

Recommendation

Meets Scientific Review Criteria (Qualified)

The CTWSRO staff has submitted a better-outlined and somewhat more complete proposal. The proposal does not give details for the majority of restoration actions that would take place under this project but rather identifies a process for prioritizing, implementing, and monitoring work that will be carried out at a number of sites within the Warm Springs Reservation. For the most part, the project meets scientific criteria for the planning phase of the habitat restoration efforts. However, assuring that actions conducted as part of this project meet scientific review criteria will require additional technical input and further scientific oversight. Therefore, we offer the following qualifications:

1. Essential details of actions at a number of project restoration sites have not yet been worked out (see first two paragraphs under Section III, p. 21). The general approach to identifying candidate sites and addressing specific limiting factors appears to be sound, but site-specific details should include (1) *quantitative* habitat information on existing conditions and improvements expected after restoration, (2) descriptions of how restoration of the site will contribute to improvement in viable salmonid population (VSP) parameters of focal species, and (3) estimates of the increased carrying capacity of the site following habitat improvement, which can be tracked over time to see if initial assumptions were justified. These issues should be addressed adequately as detailed information is gathered as part of annual reporting requirements, and certainly before restoration work begins.
2. More details about the habitat project monitoring efforts are needed. The proposal states that PNAMP protocols will be followed, with physical and biological components of the monitoring constituting separate phases of the monitoring and evaluation work. Each project site should have its own monitoring and evaluation plan, as the specific restoration actions will vary from place to place and will require different habitat and fish population metrics for monitoring purposes. Site-specific monitoring details should be developed and reported as part of annual reporting requirements, and the details should be clear before restoration work begins. The ISRP understands that the level of detail in plans will vary according to the scope and scale of restoration actions at a

particular site and recommends that project-specific scientific review be commensurate with the complexity of the proposed action.

3. The ISRP should review a draft of the project evaluation criteria and monitoring plan before it is finalized. In particular, plans for tributary actions following the "contract design" phase should be scientifically reviewed before implementation. Likewise, monitoring plans for restoration sites should be peer-reviewed for scientific adequacy. A reasonable schedule should be established for site-specific plan development and scientific review.

Depending on when project plans are developed, some of the additional peer review recommended above could occur as part of the Geographic Review of projects in the Deschutes subbasin.

General

The current project narrative is much improved over previous versions. This proposal does a better job of linking the habitat restoration work with other restoration efforts within the Warm Springs Reservation and Deschutes River subbasin. The cover letter states that the habitat restoration portfolio in the plan is not intended to allow for review of individual projects, but rather to serve as a programmatic template for restoration work within the CTWSRO boundaries. This is somewhat problematic for the ISRP because we usually do want to see details of proposed work in order to determine if a project is scientifically sound. Although we still feel details of restoration actions and corresponding monitoring are necessary, we believe the steps for identifying problem areas, plans for improving watershed processes, and decisions about individual habitat actions are based on well-grounded scientific beliefs and approaches.

The Section 10 narrative remains somewhat vague with respect to site descriptions and monitoring details. The tone of the narrative suggests that these details will be developed as the project moves forward. The ISRP is reasonably confident that the work will produce needed habitat improvements, but we strongly encourage the project proponents to follow through with developing implementation and monitoring plans before individual restoration projects get underway. We further recommend that they seek outside professional assistance as appropriate. Once details have been developed, it would be helpful for site-specific plans to be peer-reviewed by the ISRP or by a similar group of habitat restoration specialists to provide feedback from others familiar with similar habitat improvement projects.

Some of the scientific issues identified by the ISRP in earlier versions of Section 10 remained. While the project is viewed by the proponents as "programmatic," the overall focus seems to be planning for targeted actions in particular tributaries. On page 16 the proposal states, "*funding will be used to support infrastructure to manage the administrative needs of the project, and the remaining will be used for programmatic development, design and matching funds for implementation of projects. Additionally, these funds will be used to maintain prior implemented habitat protection projects (e.g. fence lines, off-site water developments).*" The proposal does not provide insight into how the effort will be allocated between planning,

administration, prior project maintenance, and allocation of matching funds. The likelihood of achieving implementation of the full suite of actions contemplated for the Warm Springs Reservation was not clear.

A preliminary restoration evaluation form is presented on page 19, but the questions are tentative at this time, and how the form and subsequent evaluation will determine project prioritization or guide final design is not explained. The decision to proceed with restoration has already been decided for the three projects mentioned on page 21, and developed in more detail later in the proposal. The ISRP would like to learn more about this prioritization process.

The proposal summarizes habitat assessments conducted from 1996 to 2000 and presents summary information from the Subbasin Plan and Mid-Columbia Steelhead Recovery Plan to justify its proposed actions. However, little information is presented on the actual status of fish at candidate sites, and it is unclear whether additional habitat assessments are needed. Relatively little information is provided on the anticipated improvements in abundance, productivity, diversity, or spatial structure (VSP parameters). On page 25 the proposal states: *"In 1987, efforts included installation of 155 boulder structures…..Efforts to stabilize the bank using rock gabions and riparian planting were ultimately unsuccessful to create pools, increase stream depth and increase habitat diversity."* The restoration actions in this proposal may (or may not) result in reach-scale improvement, but it remains to be demonstrated that this will likely improve the overall productivity of focal species. Because the survey of reference conditions in the past is being repeated, an improved understanding of baseline habitat characteristics may not be fully realized until 2014. This suggests that until those surveys are completed, it will not be possible to optimally prioritize those areas in need of restoration. This is a shortcoming, and seems to suggest that restoration actions should start in about 1-2 years time and not immediately. However, if restoration begins immediately it will be necessary to update project status, prioritization decisions, and the rationales for them as habitat surveys are completed.

In addition, the future monitoring phase will require additional expertise in fisheries stock assessment. Most of the expertise of the existing staff is in stream habitat. Measurement of fish responses is ultimately critical. This project could benefit greatly from some cooperative preparation with other personnel that can address the biological monitoring aspects of the project more thoroughly.

1. Technical Justification, Program Significance and Consistency, and Project Relationships

The narrative gives an expanded explanation of how the project is consistent with past Tribal restoration programs and other BPA-supported projects, and this was useful. The literature review was also reasonably thorough and up to date. While the ISRP does not doubt that high temperatures, heavy sediment loads, and large wood deficiencies exist in streams within the CTWSRO boundaries, it was a concern of the ISRP that the data table showing degraded habitat

conditions (Table 1) was based on ODFW surveys that are over a decade old. Are there more recent habitat data that could be used to make the case for restoration?

It is clear that many of the environmental targets identified for the Warms Springs River and Shitike Creek (see especially Table 2, p. 12) are still based on NOAA's Matrix of Pathways and Indicators.[1] The ISAB has discussed problems with the use of fixed environmental standards before (ISAB 2003-2) and even NOAA's own scientists (Good et al. 2003) caution against rigid adoption of fixed standards in dynamic environments. We recommend that habitat targets be re-defined based on a range of conditions appropriate to the natural disturbance regime of the CTWSRO area. A similar point was made in a previous review.

The preliminary questionnaire developed to evaluate proposed restoration projects (Figure 3) was helpful to understand how the fish habitat restoration projects will be integrated into the CTWSRO agenda. However, we are concerned about overall coordination and relationships with other management activities underway on the reservation that might have conflicting objectives, for example timber harvest. These activities may occasionally be at odds with fish restoration projects. A statement concerning the priority of restoration project, once they are approved and underway, would be helpful.

2. Objectives, Work Elements, and Methods

We were pleased to see that restoration planning will include some of the newer decision-support tools such as the River Restoration Analysis Tool[2] (p. 18) to help guide actions and priorities, and we hope the tools are applied before site selection and implementation. We were also pleased to see that the anthropogenic causes of habitat degradation will be addressed, for example, reducing livestock damage to riparian areas.

According to the narrative, many of the individual restoration projects are still in the planning stage, and design details of the actions will be forthcoming (p. 21):

> "Restoration approaches will be categorized and prioritized by project type (*e.g.,* protect intact habitat, remove barriers to intact habitat, restore processes, instream enhancement) and location where the action is expected to have a definite biological effect (*e.g.,* restoration of a floodplain where the anthropogenic disturbance has been removed). In cases where in-stream habitat enhancement is deemed necessary, and is part of a larger effort to restore watershed processes, hydraulic modeling will be used to increase the probability that the proposed enhancement is designed to perform within the recorded and predicted hydrologic range of variability. A qualified geomorphologist will be consulted during the design process to ensure the proposed habitat restoration actions are consistent with the litho-topographic template (*sensu* Beechie 2010 et. al.) of the watershed."

[1] http://www.nwr.noaa.gov/Publications/Reference-Documents/upload/matrix_1996.pdf
[2] http://www.restorationreview.com/

In most of the habitat restoration plans the ISRP receives for review, details of individual projects are provided upon ISRP request. In this project, however, the CTWSRO staff asks for programmatic endorsement, such as the ISRP has given to broad-scale habitat restoration planning in the Upper Columbia and Willamette River areas. In both of these instances, project proponents included provisions for scientific review of individual project merits as a means of ensuring that site-specific actions are based on the best available information. A similar process for reviewing individual projects should be included in this plan.

The objectives show a good understanding of biophysical aspects of restoration techniques, but only standard methods are referenced and there seems to be a high reliance on large woody debris (LWD) as a restoration agent without showing that large wood was an important historical habitat factor in this area. As well, there is an implicit assumption that recovery of productivity of lower trophic levels (e.g., primary production by periphyton) through sediment control (p. 38) will lead to increased salmonid production. Relationships between trophic levels are complicated and increases in overall fish production will be difficult to measure without a better understanding of limiting factors at other points in the system, including those outside the Deschutes River subbasin, such as contaminants, harvest, dam passage, and ocean regime shifts. On page 7 the proponents state, "Specific restoration goals within the context of salmonid life history requirements and factors limiting productivity will be defined during the planning phase of restoration." Therefore, although the site-specific restoration goals are reasonably well-described, with more detail relative to previous iterations, there is still a lack of information on biological objectives, for example spawning escapement goals and production capacity increases for juveniles. In terms of specific biological objectives, this proposal remains a plan to develop a plan.

3. M&E

The narrative states that monitoring guidelines will be consistent with PNAMP protocols for restoration efforts at the project scale. It also states that projects will be monitored "over the life of the project or at a minimum 10 years" (p. 47). We are pleased to see that CTWSRO will attempt to adopt monitoring methods used elsewhere in the Columbia River Basin for comparison purposes, and especially that they will monitor restoration effectiveness for a decade or more. We also applaud the commitment to monitor at the individual project scale and the watershed scale. Examples are given for three of the proposed enhancement projects – Potters Pond channel restoration, Warm Springs River LWD additions, and Beaver Creek channel complexity.

Additional details about the monitoring plans are needed and should be established prior to implementing individual actions. Details include (1) who will do the work, (2) what physical and biological response metrics will be used to evaluate effectiveness, (3) how often will sampling occur, (4) against what baseline will restoration response be measured, that is, will there be unenhanced reference sites or will evaluations be based on before-after comparisons, and (5) what analytical methods will be used and where will data be archived? For the three examples

given in the narrative, some of these questions have been answered, but more complete details are needed before the projects are begun.

The number of years required to determine success or failure should be more carefully considered. This is particularly important in light of previous restoration projects that have failed to achieve project objectives, for example Potters Mill, because of unexpectedly high flows, as these are likely to become more frequent with climate change. In another example, proponents state (p. 32): "This project is largely instream habitat enhancement for riparian zone recovery so the system will function closer to its physical and biological potential until natural wood recruitment is re-established." Information is needed on how long it will be before natural wood recruitment begins in order to set a time frame for monitoring recovery of pools and cover.

4. Overall Comments - Benefit to F&W

This project plan is an improvement over previous versions of the plan. Additional work is needed on the development of individual restoration projects and monitoring programs that are appropriate to the type of work being carried out at each site. Individual projects or sets of projects using a similar restoration strategy (e.g., LWD additions, channel restoration) deserve peer-review, whether by the ISRP or by a similar group of habitat restoration specialists. The project proponents are aware of recent scientific approaches to habitat restoration in the Columbia River Basin and with thoughtful development of detailed implementation and monitoring plans should be able to significantly improve habitat for native fishes in the CTWSRO area.

Reference

Good, T. P., T. K. Harms, and M. H. Ruckelshaus. 2003. Misuse of checklist assessments in endangered species recovery efforts. Conservation Ecology **7**(2): 12. [online] URL: http://www.consecol.org/vol7/iss2/art12/