



## Independent Scientific Review Panel

for the Northwest Power & Conservation Council  
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**Memorandum (ISRP 2011-4)**

**February 18, 2011**

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

**From:** Eric Loudenslager, ISRP Chair

**Subject:** Review of the Confederated Tribes of the Warm Springs Reservation Fish Accord 2011 Revised Proposal: Deschutes River Restoration Program, #2008-301-00

### **Background**

The ISRP has reviewed several iterations of the Confederated Tribes of the Warm Springs Reservation Fish Accord Proposal: Deschutes River Restoration Program, #2008-301-00. This December 2010 version of the proposal was revised in response to the Council's [January 13, 2010 decision memo](#) and the ISRP's December 1, 2009 review ([ISRP 2009-49](#)). See the Council's decision memo for a detailed description of the reviews to date.

The proposal describes a program intended to focus on projects aimed at improving instream habitat along with holistic watershed restoration directed at factors limiting salmonid production. Projects will target four broad limiting factors including habitat complexity and quantity, fine sediment, waters temperature, and altered hydrology.

The ISRP's review follows below.

### **Recommendation**

#### ***Does Not Meet Scientific Review Criteria***

The limiting factors to be addressed were clearly linked to the Deschutes subbasin plan and the Mid-Columbia steelhead recovery plan. The streams chosen for restoration were identified in both the subbasin plan and recovery plan. There were some quantitative objectives for environmental attributes identified such as fine sediments and large woody debris in some locations; however, the linkage of those habitat targets to biological objectives for fish was lacking.

Previous ISRP reviews of this project noted the lack of technical detail in the proposal describing restoration projects that would be implemented by this project. The evidence that the habitat conditions being addressed by this proposal are in poor condition was generally supported in this revised proposal. However, reasons for selecting specific locations were not adequately explained. The proponents did not adequately respond to the five points raised by the ISRP and mentioned in the Council letter. More details on these restoration projects are required for an ISRP scientific review. Having gone through several previous reviews, including a conference call, it is clear to the ISRP that a different proposal approach with additional, new information is needed before further review could be helpful.

An example of what the ISRP expects in this type of proposal can be found in the sequenced review of the initial proposal and individual actions in the Wenatchee Complexity project (200732500). The following was extracted from our initial review of the project, asking for additional detail:

“In order to properly justify habitat restoration projects, the project sponsors need to provide sufficient essential details that enable the ISRP to assess the value of the project on scientific merit.

This basic information includes:

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 its FY 2007- 09 review, the ISRP was unable to judge the scientific merits of the Wenatchee Complexity Project because this project involved five different channel migration zone (CMZ) restoration sites and insufficient information was presented for each site to satisfy the basic information needs outlined above. The Council, in response, provided funding for securing landowner agreements, completing implementation plans, and developing monitoring plans for each of the floodplain reconnection locations. Once that phase was completed, and pending scientific review by the ISRP, the projects could go forward.”

In response to our request, the Wenatchee Complexity Project proponents supplied us with the site-specific information needed for a scientific review, each project was reviewed individually, and the proposals met our criteria for scientific justification. We think the same could happen with the Deschutes River Restoration Program.

The ISRP agrees that the engineering and construction activities associated with techniques, such as wood placement and riparian fencing have been refined over the years. But the actual methods to be employed are only one element of a restoration project. Of equal or greater importance is an explanation of the rationale for the location of the project and for the expected habitat and biological response. For example, where will large woody debris (LWD) placements occur on the Warm Springs River and why were these sites selected? Some rationale for the location of these projects should be provided, such as known use of the reach by the target species and evidence that the site is wood-poor. Also a more specific discussion of the potential biological benefits should be included. For example, the association between a reduction in sediment input and the potential to increase incubation survival seems clear, but this type of improvement would be far more effective if mitigation measures were implemented at a location proximate to a key spawning reach.

The second component of this proposal is to establish a coordinating process to identify, prioritize, fund, and execute future restoration projects. The proponents cite Beechie et al. (2008) and Beechie et al. (2010) as guidance on prioritizing and developing process-based restoration respectively. However, the proposal failed to provide a convincing case that they had established and followed the logic path in Beechie (2010):

1. Restoration should address the root cause of degradation;
2. Actions must be consistent with the physical and biological potential of the site;
3. Actions should be at a scale commensurate with the environmental problems;
4. Actions should have clearly articulated expected outcomes for ecosystem dynamics.

Except in the instance of road decommissioning and resurfacing, it was not clear that the “root” cause of the disturbance will be addressed. More often the actions seemed directed toward active intervention to address a proximate limiting factor (number of pieces of wood in the stream). There was little discussion of how restoration actions were going to be woven into the land-use that now predominates the watersheds. There was little to describe, or estimate, the physical and biological potential of the sites – even though assessments have been completed for the subbasin and recovery plans. There was thus insufficient evidence that the restoration actions being proposed are appropriate remedies for the environmental problems.

A major issue is the “what and where” questions as the proponents plan a prioritization exercise that involves all Tribal members and includes socio-economic factors. This version of the proposal represents an improvement over previous versions; however, some deficiencies still exist. The criteria to be employed in identifying the most promising projects are most completely addressed on page 23. The criteria are partitioned into Planning, Social, Technical and Financial categories. The ISRP agrees that elements in each of these areas are important considerations for prioritizing projects. However, the Planning and Technical categories fail to include an element relating to the location of a project. A key component of project success is whether or not it is executed in a location with a high potential for a biological response. This

consideration must be included as one of the criteria to ensure that restoration resources are used in the most efficient manner.

The proposal would be improved by more details on how the restoration will be done and what species of salmon is targeted at particular locations. There is a reliance on references to standard protocols, and only general locations of where the treatment is to be applied are given. The proponents intend to consider planning, social, technical, and financial aspects in a prioritization process. The ISRP requires a better description of the prioritization process including how the various aspects will be weighted.

Over and above the “what and where” question the proponents have not addressed some of the key biological questions posed by the ISRP, such as expected biological benefits. The proposal indicates that EDT has been completed for the project area. As EDT is a reach-specific analysis tool, the output from this model should help to identify reaches with high biological potential. But the proposal contains no indication that the EDT output was used in prioritizing the planned projects or will be used in determining the priority of future projects. Information on expected population responses via EDT, or other models, was not presented. No information is given on statistical aspects of potential population response, such as power analyses. Is it likely that restoration activities will result in a meaningful biological response?

### **Specific comments by restoration type**

#### Habitat Complexity and Quantity

Large woody debris (LWD) is to be placed in Warm Springs River and its tributaries, but it is not clear if the wood will be placed in the reaches shown in Table 1 or elsewhere. Further details on implementation would be helpful. How will LWD be retained in the streams (which could discharge a large volume of water at times)? Will five miles of LWD placement actually result in the desired increase in salmon? What are the “other passive and active restoration techniques” to be used?

#### Fine Sediment

Limitations due to sediment conditions are identified, but it is not clear if the proponents are referring to the whole stream, selected reaches, or specific habitats such as spawning beds. Specific details on how and where sediment input will be controlled are required.

#### Water Temperature

Thermal imagery clearly shows the importance of maintaining and restoring wetland habitat because of its role in temperature control. However efforts to use thermal imagery would be better supported by further detail, including the anticipated effects of restorations on winter temperatures. The statement “Fluvial process will be restored where possible to maintain the dynamics necessary to maintain thermal refugia” is insufficient.

### Altered Hydrology

The proponents note that “The Recovery Plan identified altered hydrologic process and altered sediment routing as factors limiting steelhead production and recovery on the Warm Springs Reservation” and this is one of the few instances where species limiting factors are identified. However, some of the claims regarding altered hydrology were not as well supported as those for wood, temperature, and sediment. The section discussing this limiting factor indicates that runoff has increased 33% from historical conditions in Coyote Creek. This statement seems to imply that total annual water yield from this watershed has increased by this amount. This seems an exceptionally large increase in this parameter. Loss of vegetative cover can cause increased water yield due to decreased transpiration during summer and increased snowpack in winter. If increased water yield is viewed as an important factor in habitat degradation, vegetative cover in the watershed should be the focus of restoration and not roads. Because roads cover a relatively small proportion of a watershed, at least in watersheds with low levels of urban development, they rarely cause an appreciable increase in total runoff. Their primary effect is on runoff rate. Roads accelerate the movement of precipitation to channels by promoting rapid surface runoff from roads surfaces and by intercepting subsurface flow at road cuts and rapidly funneling this water to stream channels. Acceleration in runoff rate can lead to increased peak flow levels, which can degrade stream habitat. But rate of runoff does not greatly impact total amount of water delivered to channels. Therefore, road removal and reconfiguring road drainage systems is unlikely to change runoff amount appreciably. If rate of runoff and peak flows are the hydrological alteration that these road actions are attempting to correct, this objective was not articulated in the proposal. To some extent, this criticism is academic due to the fact that the same actions with roads are necessary to address sediment production and delivery to streams. Nonetheless, the hydrology discussion of the proposal was not well presented, and as a result, was confusing.

### Appropriateness of Habitat Standards

Over the last decade, there has been an extensive discussion in the scientific literature about the problems with the application of fixed standards in habitat protection and restoration programs. This type of standard (e.g., 20 pieces of wood/mile; 15°C maximum water temperature) fail to recognize natural spatial variation in habitat conditions and the role that natural disturbances play in creating and maintaining productive habitat long-term. The proposal authors implicitly acknowledge this fact in their discussion about protecting springs and other cool water sources that provide thermal refuges for fish during summer. The application of a fixed water temperature standard to these locations could represent a considerable degradation in water temperature. Despite the problems with fixed standards, they do represent a starting point in the absence of information to develop anything more realistic. As monitoring efforts in the project area begins to generate more site-specific information, the DRRP, and other entities participating in management and restoration of these watersheds, should review and revise these standards with the ultimate goal of producing a set of reach-specific criteria for the key limiting factors.

## **Proposal Clarity**

The proposal suffered from typographical errors or omissions that, in some cases, created a lack of clarity. An example is Table 1. The presentation of the results of habitat surveys that is summarized in the table greatly helps to support the contention that habitat conditions are degraded. But some of the values presented appear to be calculated or labeled incorrectly. Notably, the rows that present Large Wood/Reach and Large Wood/Mile do not correspond. For example, Reach 6 on Shitike Creek has a reach total of 494 pieces of wood in 5.8 miles. However, the Large Wood/Mile row indicates that this equates to 0.3 pieces/mile rather than something around 85. This discrepancy is so great that it suggests that the row on Large Wood/Mile was mislabeled. These types of problems should have been identified and corrected prior to submitting the proposal.

Beechie and 3 co-authors. 2008. Setting river restoration priorities: a review of approaches and a general protocol for identifying and prioritizing actions. *North American Journal of Fisheries Management* 28:891-905.

Beechie and 7 co-authors. 2010. Process-based principles for restoring river ecosystems. *BioScience* 60 (3):209-222.