Northwest Power and Conservation Council



August 5, 2010

# DECISION MEMORANDUM

**TO:** Council members

**FROM:** Mark Fritsch, project implementation manager

**SUBJECT:** Council decision on Project #2009-004-00, *Monitoring Recovery Trends in Key Spring Chinook Habitat Variables and Validation of Population Viability Indicators*, Columbia Basin Fish Accord project.

**PROPOSED ACTION:** That the Fish and Wildlife Committee recommend that the project continue implementation as reviewed and that the ISRP review the second phase of the project prior to the 2014 field season.

## BUDGETARY/ECONOMIC IMPACTS

The total budget for this Accord project equals $9,322,242 (i.e., it ranges from $750,000 to $1,057,482 per year[1]) in expense funds for Fiscal Years 2008 through 2017. To date, two contracts have been let to implement this project. The first contract (#42059) had a performance period of April 1, 2009 to March 31, 2010 with a budget of $781,614, and the current contract has a performance period of April 1, 2010 to March 31, 2011 with a budget of $851,559. The Columbia River Inter-Tribal Fish Commission (CRITFC) is currently developing baseline data necessary to assess its project model. The on-the-ground work will better inform CRITFC of its modeling structure.

## BACKGROUND

In 2008-2009, the Bonneville Power Administration, the U.S. Army Corps of Engineers, and the U.S. Bureau of Reclamation (the Action Agencies) signed agreements with the Confederated Tribes of the Umatilla Indian Reservation (CTUIR), the Confederated Tribes of the Warm Springs Reservation of Oregon (CTWSRO), the Confederated Tribes and Bands of the Yakama Nation (YN), and the Columbia River Inter-Tribal Fish Commission (CRITFC). The agreement with these Tribes and CRITFC is referred to as the Three Treaty Tribes MOA. The Action Agencies also signed agreements with the Confederated Tribes of the Colville Reservation

[1] This range includes the anticipated 2.5 percent annual inflation adjustment, beginning in Fiscal Year 2010.

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(CCT), the Shoshone-Bannock Tribes (SBT), and the states of Idaho, Montana, and Washington. These agreements are known as the Columbia Basin Fish Accords.

As set forth in the guidance document outlining the review process for the Accords, the Council recognizes Bonneville's commitment to Accord projects. The Accords do not, however, alter the Council's responsibilities with respect to independent scientific review of project proposals or the Council's role following such reviews. As with all projects in the Fish and Wildlife Program, Accord projects are subject to review by the Independent Scientific Review Panel (ISRP), and the Council provides funding recommendations based on full consideration of the ISRP's report and the Council's Program.

On June 25, 2009, the Council received from Bonneville a Columbia Basin Fish Accord proposal from CRITFC, #2009-004-00, *Monitoring Recovery Trends in Key Spring Chinook Habitat Variables and Validation of Population Viability Indicators*. The goal of this project is to determine if there is a feasible way to construct a habitat database using fewer variables than typically used in analysis to estimate the effect of current and future habitat condition on salmon productivity.[2]

On July 27, 2009 the ISRP requested additional information from the CRITFC in order to determine whether the proposal met scientific criteria (ISRP document 2009-33). The ISRP provided an "in-part" recommendation and requested additional detail regarding the methods used to measure habitat variables and an explanation of how this study will associate improvements in habitat facilitated by restoration projects to improvements in the survival and production of various phases of spring Chinook life cycles in the upper Grande Ronde. No public comment has been received on the ISRP review.

On May 21, 2010 the Council received the response from CRITFC, and on July 9, 2010 the Council received the ISRP's final review (ISRP document 2010-24). The ISRP again found that the proposal meets scientific review criteria "in part." The recommendation, however, changed from their previous review, based on clarity and detailed response provided by the CRITFC, to include model development as outlined in the proposal (i.e., Phases 1 and 2 (specifically)).

**ANALYSIS**

The ISRP found the CRITFC's response provided the detail requested in their preliminary review. They also appreciated the information received on the sampling design, logic path between effectiveness and trend monitoring, and the figures that displayed the project's objectives. In addition, in the preliminary and final reviews they noted the ambitious nature of the project. To support this project they included as part of the final review a brief outline of the initial ISRP review comments, the corresponding CRITFC response, and their final comment.

[2] This project is described in three phases (a) the first year, to develop and test sampling procedures, develop a long-term coordination plan, and design successive phases, (b) a 5-year period to implement full sampling in two damaged watersheds supporting key TRT Chinook populations, continue development of sampling procedures and protocols, develop a set of models representing the relationship between watershed conditions and fish responses at the individual and population scales, and plan for the second 5-year phase, and (c) the second 5-year phase: continuation of lower intensity monitoring of trends in the two initial study areas and implementation of monitoring in a second set of streams to represent contrasting intensities of disturbance, and development of additional models representing habitat/fish interactions for all life stages.

The ISRP provided their final recommendation based on the suggestion that the sponsor implement an experimental adaptive management approach, using an expert-based (e.g., workshop-based collaboration) modeling exercise instead of the on-the-ground designed multivariate model to estimate population sizes as they relate to key environmental variables.

The current proposal proposes to work within the upper Grande Ronde River (GR) and Catherine Creek (CC). These basins are among those often cited in the Biological Opinion (BiOp) as having extremely damaged habitat with very weak populations of listed spring Chinook and steelhead populations. That said, the importance of restoring these basins is very high in promoting restoration of key populations essential to this overall Grande Ronde major population group. With habitats and populations that are so damaged, with so much emphasis focused on restoration, and with the history of multi-agency restoration and Program-funded projects, the potential for demonstrating improvement should be high.

One of the critical uncertainties of the BiOp involves the determination of whether the improvements in overall habitat quality anticipated from aggregate habitat actions on a basin scale will yield a net improvement in basin-wide habitat quality or whether ongoing degradation will negate or outweigh these improvements. In addition, it is not possible to conduct intensive monitoring of habitat status on all salmon-bearing basins within the Columbia Basin, so a representative sample of basins is currently being funded through the Program for monitoring progress in habitat restoration by other agencies. (ISEMP[3]: Wenatchee, Entiat, South Fork Salmon, Lemhi, and South Fork John Day rivers, and Bridge Creek). This effort does not include the Grande Ronde Subbasin.

As the ISRP notes, there are several existing models that attempt to show biological response as a function of habitat quality/quantity. In the Columbia basin, the Ecosystem Diagnosis and Treatment (EDT) model is widely used to assess potential changes in population abundance and productivity based on restoration scenarios. However, this model has been criticized for having an excessive number of parameters. It should also be pointed out that actual information for many of these habitat parameters is not available and is usually "expert driven."

As mentioned above, the majority of habitat models are burdened by monitoring of an extensive list of variables so that it becomes infeasible to monitor all possible variables controlling salmon productivity and abundance. The proposal under consideration attempts to construct a habitat database using fewer variables than typically used in modeling the effect of current and future habitat condition on salmon productivity.

[3] Project 2003-017-00: Integrated Status and Effectiveness Monitoring Program (ISEMP). This project seeks to develop two novel monitoring and evaluation programs: (i) subbasin-scale pilot status and trend monitoring efforts for anadromous salmonids and their habitat in the Wenatchee, John Day and Salmon River basins, and (ii) effectiveness monitoring for suites of habitat restoration projects in selected watersheds within the three target subbasins. This work builds on current status and trend monitoring programs within each of these basins; however, the proposed work differs structurally from much of the ongoing status and trend monitoring work as it focuses on the explicit development and testing of the sampling protocols and methodologies required for generating habitat and population monitoring data of known spatio-temporal resolution, accuracy and precision. In addition, the proposed work expands on the utility of status-monitoring data to address explicitly watershed-scale questions of habitat restoration action effectiveness.

It is important to note that the basis of the ISRP recommendation is a "suggestion" that the CRITFC alter their proposed approach to this modeling exercise by initially developing a simulated model based on existing information and an expert-based approach. This suggestion is a radical change to the approach detailed by CRITFC, which is based on developing a basic model of productivity by use of measured water temperature, streamflow, and fine sediment data. CRITFC notes that subsurface fine sediment data have not been collected by other agencies in the Grande Ronde and surface fine sediment information is only available from rough ocular judgments. Also, the 1999 water temperature model for the Grande Ronde did not make use of LiDAR data, which is essential for accurate solar radiation modeling. In addition, the CRITFC temperature model will be constructed on the basis of more extensive streamflow measurements than had previously been done.

The CRITFC agrees with the majority of the concerns and issues raised by the ISRP reviews. In fact, the input has been extremely helpful to their design and approach. This was especially true with the ISRP's initial review (ISRP document 2009-33) stating that CRITFC was "probably trying to bite off too much," and that they needed the following.

- a greater intensity of monitoring of study sites on a rotating panel design to more effectively show trends, and
- a control site or sites with which to show the differences between inter-annual variability caused by climatic factors and trends due to habitat degradation or restoration.

Based on this input the CRITFC revised their proposal to focus efforts in the full 10-year period on the GR and CC as watersheds demonstrating restoration and the Minam River as a control watershed. By doing this realignment, they are addressing the ISRP's recommendations by completing the basic modeling work, but building it using real data. In addition, the CRITFC is using the General Randomized Tesselation Stratified Spatially-balanced Survey (GRTS). The July 2009 ISRP review had suggested the use of an Environmental Monitoring and Assessment Program (EMAP) approach to site selection, which CRITFC implemented. Based on this revised approach, the CRITFC will be prepared to offer a realistic model component of the freshwater life cycle (spawning to smolt emigration), and incorporate this in the full life cycle model being developed regionally. CRITFC staff on this monitoring project work with regional modelers on life cycle modeling. The outcome of CRITFC's first phase in freshwater life cycle model building, based on data collection of key habitat factors, would then be submitted to the ISRP for review prior to the 2014 field season. Their proposal for FY 2014 would then be viewed against the background of the foundation created in their first phase of data collection, analysis, and model building. Through this review, the CRITFC will be able to refine the next phase for this project.

In addition, there are additional high priority research, monitoring and evaluation needs in the upper Grande Ronde and Catherine Creek that were identified in the BiOp for the Federal Columbia River Power System (FCRPS). To meet these needs an additional Intensively Monitored Watershed (IMW) is being designed for the upper Grand Ronde and Catherine Creek.[4] This new project, sponsored by Oregon Department of Fish and Wildlife (ODFW), will

[4] Project 2010-055-00: Upper Grande Ronde and Catherine Creek IMW

provide the smolt and adult monitoring that will be critical to the CRITFC project. ODFW and CRITFC have coordinated efforts to create an IMW in which ODFW will focus on adult and smolt monitoring, and CRITFC will conduct habitat monitoring. Other agencies and tribes are conducting various types of monitoring and research in these study basins at varying spatial scales. This work can be effectively coordinated through an IMW. CRITFC has expressed in its FY 2009 annual report a significant level of coordination with other agencies and the CTUIR in these basins. This linkage to IMW will complement these monitoring efforts and provide information necessary for conclusions regarding treatment/effect and gap analysis that influence and guide habitat restoration projects and priorities.

Based on the ISRP review and the current status of the project's implementation, the Council staff recommends to the Fish and Wildlife Committee that the project continue its model building, as reviewed by the ISRP, but use actual (much of which it already has from FY 2009) rather than simulated data, and that implementation of the second phase of the project be based on a review by the ISRP prior to the 2014 field season.

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