



Independent Scientific Review Panel

for the Northwest Power & Conservation Council

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Memorandum (ISRP 2016-11)

August 30, 2016

To: Henry Lorenzen, Chair, Northwest Power and Conservation Council

From: Steve Schroder, ISRP Chair

Subject: Review of Draft Kootenai River Floodplain Ecosystem Operational Mitigation and Evaluation Plan (Mitigation Plan)

Background

In response to the Northwest Power and Conservation Council's June 28, 2016 request, the Independent Scientific Review Panel (ISRP) reviewed the [Draft Kootenai River Floodplain Ecosystem Operational Mitigation and Evaluation Plan](#) (Mitigation Plan) and supporting appendices submitted by the Kootenai Tribe of Idaho (KTOI) and Montana Fish, Wildlife & Parks (MFWP). The Mitigation Plan was submitted as a Phase 2 document for the *Kootenai River Floodplain Ecosystem Operational Loss, Protection, Mitigation and Rehabilitation Project* (BPA Project Number 2002-011-00). The Mitigation Plan is intended to guide the upcoming third phase of the project—mitigation and restoration of the Kootenai River floodplain ecosystem.

The ISRP has conducted a number of reviews associated with this project beginning with a proposal evaluation as part of the Wildlife Category Review ([ISRP 2009-17](#); June 10, 2009) and including two follow-up reviews related to Phase 1 of the project, development of an operational loss assessment ([ISRP 2012-18](#), [ISRP 2013-13](#)). In the 2013 review, the ISRP found the project to “Meet Scientific Review Criteria (Qualified)” with the qualifications that the ISRP evaluate 1) the multi-year restoration plan, including specific goals and 5-10 year quantitative objectives for their actions and 2) documentation of progress at regular intervals of 1-2 years. The Council concurred with the ISRP's qualifications and recommended that the project proponents submit a mitigation implementation plan including an update on project progress. The Mitigation Plan, the subject of this review, is intended to meet these qualifications and was based on information and evaluations provided by the Phase 1 Operational Loss Assessment (OLA).

The following ISRP comments from the 2013 review are particularly germane to this review:

The sponsors showed the success of their approach for assessing losses, but the ISRP remains uncertain how this will be applied to build the restoration plan and then to effectively monitor specific restoration actions. The sponsors should therefore develop goals and quantitative objectives for their restoration actions that can be effectively monitored and evaluated. The sponsors have taken an ecosystem approach. However, for on-the-ground applications, this ecosystem perspective will be difficult to sustain due to the need to make project planning and implementation decisions for specific sites regardless of how broadly conceptualized the context for the work is. Thus, the advisory team needs to develop a strategic plan guided by a refined model. The progress and component indices associated with this large project should be evaluated at regular intervals of 1-2 years (i.e., along with interim analyses using the current indices) to assess their usefulness in detecting responses to project actions. Although the project will progress one step at a time, it may be 10-20 years before improvements can be observed and documented at a larger scale. ([ISRP 2013-13](#))

ISRP Recommendation

Meets Scientific Review Criteria (Qualified)

The proponents were successful for the most part in developing a plan that met their desired principles to provide a clear tie to Operational Loss Assessment (OLA) findings; an acreage-based mitigation accounting; a focus on floodplain, riparian, and wetland habitats being altered by ongoing dam operations; and an approach that is easy to follow, explain, and justify. Despite this evidence of progress, the ISRP's recommendation remains "Meets Scientific Review Criteria (Qualified)." The qualification is that to strengthen the plan and fully meet the scientific review criteria, the following elements should be added to the next draft of the Mitigation Plan:

- An improved strategic plan to guide implementation
- Quantitative objectives describing desired/expected ecological outcomes of restoration and protection project work. These are necessary to guide effectiveness monitoring for these projects.
- Additional specific details on how monitoring and evaluation activities will be planned, implemented, and evaluated for restoration and protection projects.

On a related matter, the ISRP looks forward to reviewing the upcoming synthesis report for the suite of Kootenai River restoration and investigation projects¹ and learning how this project integrates into the broader Kootenai River restoration effort.

¹ See [ISRP 2012-6](#), pages 111-124, Final Review of Proposals for the Resident Fish, Data Management, and Regional Coordination Category.

ISRP Comments

1. Summary Comments

This plan lays out key components for future program and project implementation and also provides a framework for tracking the amount of mitigation (i.e., acres) achieved. The processes and general logic are generally understandable and clearly written. The basic elements of an implementation plan are provided and include mitigation targets (acres) and general locations, cost estimates, maintenance considerations, and a general approach to monitoring.

However, a strategic plan is needed to guide implementation. It is noted on page 3 of the report that the implementation plan not only identifies mitigation needs but also “opportunities to restore ecological functions within the Kootenai River Valley.” Development of a more comprehensive and detailed strategic framework would help focus efforts to ensure the most effective results are realized from a very large area and lengthy implementation time frame. The report does provide two strategic recommendations to “most effectively” mitigate for wildlife habitat impacts “protecting lands and restoring ecological function” (Page 10). The report also suggests focusing mitigation on the 1 to 50-year floodplain (i.e., the portion of the floodplain with a 1 to 50-year flood frequency) in order to maximize riparian habitat benefits (page 10). Additional strategic consideration of items such as highest priority locations, ecological settings and treatment types, possible sequencing and timing of treatments, partnerships and opportunities for leveraging funds, and increasing capacity would improve the strategic foundation for guiding Phase 3 implementation.

Details are needed for future monitoring and evaluation of project and program effectiveness. Although objectives are provided for acres of mitigation to be accomplished, in total and per decade (listed as goals, sub goals and objectives), and a general approach for tracking accomplishments is described, no quantitative/time sensitive objectives are provided to describe expected ecological results from protection and restoration activities. Some quantitative objectives with time frames will be needed for evaluating project and program effectiveness. Objectives framed to describe projected changes in Indices of Biotic Integrity (IBI) scores or in percentage survival for planted vegetation will facilitate ongoing evaluation and reporting of project and program effectiveness. As data from projects become available, the proponents should reassess other components of the more comprehensive Index of Ecological Integrity that was presented in the original OLA. As suggested by the proponents in 2013, the acquisition of additional data may make it possible for some of the originally proposed indices to document the effects of restoration actions. Additionally, other potential measures of effectiveness (e.g., more direct hydrologic measures such as frequency of inundation) should not be overlooked.

However, even with more preliminary data and effective visualization of possible outcomes, this complex program poses significant challenges for monitoring. Moving forward, the overall strategy needs to be carefully evaluated for effectiveness by the proponents and reviewed by the ISRP. For the foreseeable future, the KTOI and the ISRP should be in close communication

on this project (1-2 years) due to the complex and innovative nature of what is being attempted. This project will require an active Adaptive Management framework to adequately evaluate initial actions and to guide actions or revisions made in the future. Effective application of lessons learned will be crucial to program success.

2. Comments on Introductory Sections (Preface, Historical Context, Background, Project Area, Operational Loss Assessment Indices)

The proponents were successful for the most part in developing a plan that met their desired principles to provide a clear tie to Operational Loss Assessment (OLA) findings; an acreage-based mitigation accounting; a focus on floodplain, riparian, and wetland habitats being altered by ongoing dam operations; and an approach that is easy to follow, explain, and justify. Past history and context for the project was provided. The early overview of activities of native people in the river basin was of interest; however, the references were not listed in the Literature Cited section.

OLA indices were previously described in detail to the ISRP in the 2013 OLA document; Table 1 and Figure 2 were useful reminders of the approach used. In this current document, it would be helpful if the authors included some information on how they dealt with past recommendations made by the ISRP in its Phase 1 review of the project. This could be included in the body of the document or in an Appendix. One example is the ISRP suggestion that “the advisory team needs to develop a strategic plan guided by a refined model.” It is noted on page 3 of the report that the OLA has been presented to, critiqued by, and finalized for the ISRP. Discussion is needed of any subsequent refinements to individual model components or in testing different weightings for the components in development of overall scoring.

An Executive Summary would be a useful addition in the next version of the Mitigation Report.

3. Comments on the Mitigation Plan Section

A good deal of information was provided in this section including identification of functional acres lost and a system for determining and tracking credit acres for protection and restoration. In determining Functional Acres lost, a simple equation, $(1 - \text{Index of Fluvial Floodplain Alteration}/10) \times (\text{available acres in the 1-50-year floodplain})$ was used. This appears to be a reasonable approach that will also allow the opportunity to recalculate losses if there are major changes in reservoir operations, including those that may occur as an outcome of renegotiation of the US/Canada Columbia Basin treaty.

A rationale is provided for the use of mitigation funds for Out-of-Basin credits. Given that the plan remains to be implemented, it seems premature to be focusing efforts outside of the basin. A more complete analysis of opportunities, strategic approaches for protection and

restoration, and monitoring and evaluation of within-basin effectiveness are important steps that should be completed before considering investments out-of-basin.

To receive Protection Credit Acres, it is proposed (page 10) that stewardship funding for ongoing operations, maintenance, and evaluation (OME) budgets must be adequate to maintain existing habitat values and prevent further declines. Additional discussion would be useful on how the “adequacy” of OME funds will be determined, who will be responsible for doing this, and how frequently budgets and habitat conditions will be evaluated and revised.

Additional discussion would be useful on criteria for crediting other “perpetually protected areas, not purchased through BPA funds or without a restoration plan.” On page 11, it is stated that Protection Credit Acres will be applied when the project footprint fully meets designated success criteria (i.e., plant density measured at 5-year intervals) or when an adequate budget has been secured to fully implement the plan. It appears that additional information such as density by plant species and accomplishment of specific distribution and structure of plant associations could be important elements for inclusion in crediting. Also, it is not clear why crediting can occur before any work is accomplished. It would seem more reasonable to determine the effectiveness of restoration before claiming credits.

The strategy to focus on acreage within the 1 to 50-year floodplain seems most appropriate. However, other details about Protection Credit Acres require explanation for those not familiar with the approach. For example:

- How (and why) was the 0.5- to 1-acre ratio established?
- Are all acres considered to be the same in terms of restoration needed? In other words, what happens when the “to be restored” and the “preserved” acreages have very different environmental conditions than the acreage impacted by Libby dam?
- All acreage has some positive environmental characteristics. How are these characteristics factored in with the credit-acre approach?

4. Comments on the Implementation Plan Section

This section is useful in establishing target acres for total mitigation needs, decadal acreage targets for protection and restoration, and securing management rights projects. Credit acres are presented as a hierarchy of goals, sub-goals, and objectives. The proponents provide a sound foundation for organizing, planning, and tracking accomplishments (i.e., acres) for the program. It would be helpful to round the numbers, perhaps to the nearest hundred, given the limited sensitivity of the modeling (using an index ratio to generate credit acres).

One concern is that objectives describing desired or expected outcomes of restoration projects are not developed, and the need for their development during project planning is not acknowledged. Establishing project objectives to describe outcomes is critical for providing a foundation for future effectiveness monitoring. It is important that the proponents clearly

articulate what they are attempting to achieve ecologically with this major restoration and conservation program. At this time, goals and objectives are understandably somewhat general. These will need to be developed more specifically and may be modified through the adaptive management process as more is learned through early implementation activities. In particular, there is no development of specific quantitative or quasi-quantitative (e.g., ranked) objectives that describe desired ecological outcomes for this work. It would appear that outcomes could be described, for example, as changes in one or more index scores and/or actual vegetative conditions (species, structure, age class etc.). In another example, Objective 2 (page 14) says, "Use 2,121 Credit-Acres on restoration activities within the 50-year floodplain or on riparian communities IN-BASIN or OUT-OF-BASIN." Although this is a useful target for tracking total acres, the expected ecological outcomes of specific restoration activities should also be stated, so the ultimate effectiveness of the work can be determined.

On page 17 it is stated that co-managers plan to continue using and modifying mitigation strategies as well as testing and evaluating other strategies to deliver functional and cost effective projects. This is an admirable goal, but it is not supported by any detailed description for how this will occur at the project and program levels.

Finally, on page 17, it is noted that "the above mitigation plan applies specifically to wildlife." However, the original loss assessment included indices for aquatic vegetation, fish, and macroinvertebrates. It would be useful to know if these non-wildlife indices have been dropped, and exactly why, or if and how they will be used in the future. Additionally, it is acknowledged that a fish and wildlife approach to mitigation is needed and that synergistic implementation will be accomplished using the Co-Managers Review Team (CMART) to consider both fish and wildlife projects. Additional detail on this process and how it will be implemented would be useful.

Having a 100-year perspective and implementing quantitative decadal targets for acreage protection seems to be a reasonable strategy. Full implementation takes time and starting with a moderately aggressive goal is prudent, especially while many of the details are being refined. For this process to be successful, an adequate monitoring plan and formal adaptive management framework will be essential.

5. Comments on the Evaluation and Monitoring Section

The report provides a good initial framework for development of a monitoring and evaluation plan for individual projects and area wide, trend assessment. It is lacking detail on how evaluation and monitoring will actually be organized and implemented. It would be useful to know when a more detailed monitoring and evaluation plan will be available. Additionally, cost estimates for implementation of the monitoring and evaluation plan, as were presented in previous sections, would be useful.

For restoration project monitoring, it is noted (page 17) that avian indicators and vegetation success rates will be used and that these components will be incorporated into the design features of all projects. In monitoring and evaluation, as in implementation, it is important to develop quantitative objectives that describe expected changes in avian indicators and success targets for vegetative treatments (e.g. density, composition, percent cover). Additionally, it would be useful to provide more detail on how these monitoring components will be incorporated into each restoration project, how sampling methods and intensity will be determined, and who will have general responsibility for implementation, evaluation, and reporting.

The long-term emphasis on indices of avian communities and vegetation seems reasonable based on the original OLA; birds and vegetation will probably be strong indices of community responses. However, having ongoing information on floodplain hydrology is essential for understanding mechanisms driving the expression of those communities. Is there a reason why some basic, low cost, continuous monitoring of floodplain hydrology was not proposed as part of this section? As previously mentioned, other indices included in the original Index of Ecological Integrity (IEI) would warrant reassessment for use as potential evaluation and monitoring tools as projects proceed.

6. Comments on [Appendix A: A Quick Guide to a Framework for Assessing Operational Losses](#)

The Quick Guide is a nicely organized and easy-to-read summary of the OLA process. It provides a relatively detailed description of the assessment model and its components. Future activities will allow the proponents to evaluate how well each component of the model is working, as well as the effectiveness of the overall model. The proponents may then want to carefully examine specific measures for each of the indices to see how well they are working or if other parameters should be substituted. If specific indices are changed in any way, how will the proponents calibrate the new version with the older one?

It is not entirely clear who is the intended target audience(s) for the publication, but the document could also serve as an easy and compact way to share information with others interested in using this process for loss assessment.