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May 31, 2012

MEMORANDUM

TO: Council Members

FROM: Nancy Leonard
Fish, Wildlife and Ecosystem Monitoring and Evaluation Manager

John Harrison
Information Officer

Tony Grover
Director of the Fish and Wildlife Division

SUBJECT: Background and context for a committee recommendation to release High Level Indicators for public comment.

PROPOSED ACTION: Decision to release High Level Indicators report for a 30-day public comment period.

BACKGROUND:

The 2009 Fish and Wildlife Program (Program) focus is on performance, with a continued emphasis on periodic scientific review of new and ongoing actions. The Program also stresses reporting of results and accountability, adaptive management and quantitative objectives. Finally the Program calls for periodic and systematic exchanges of science and policy information and expanding the monitoring and evaluation framework with a commitment to use the information to make better decisions and report frequently on Program progress

In response to this direction, staff prepared a draft monitoring and evaluation framework (framework) in March 2010 that also described the syntheses and reports that would support assessing Program progress and adaptive management, including, high level indicators. A component of this framework, consistent with the directions given by the 2009 Fish and Wildlife Program, is for the Council to adopt and periodically update High Level Indicators (HLIs). The purpose of the HLIs is to convey to Governors, Congress, and citizens of the Northwest the status of the Columbia River Basin's fish, wildlife, and habitat and to indicate the Fish and

Wildlife Program progress toward mitigation for the construction and operation of the Columbia River hydrosystem. HLIs will include biological, implementation, and management indicators. HLIs, as mentioned above, are an aspect of the March 2012 MERR Framework, which identifies HLIs as an important reporting medium for communicating the status of the Columbia River Basin's natural resources and the Program's status. The MERR Framework and the [November 2010 MERR Plan](#) describe the HLI Report in more detail.

The HLIs have been in-development since 2008. Three HLIs were adopted by the Council in October 2009. These HLIs are the focus of the Council's 2012 draft HLI Report that was presented at the March 2012 Fish and Wildlife Committee meeting. These three HLIs are listed below, followed by their draft management questions:

1st HLI: Abundance of Fish and Wildlife

- Are Columbia River Basin fish species abundant, diverse, productive, spatially distributed, and sustainable?

2nd HLI: Hydrosystem Survival and Passage

- Are operations of the mainstem Columbia and Snake River hydropower dams meeting the fish passage survival objectives of the Program?

3rd HLI: Council Actions

- What has been accomplished under the Council's Program?

For reference, the latest version and status of all of the Council's desired HLIs, related draft management questions and supporting fish and wildlife indicators (FW Indicators) are available at www.nwcouncil.org/fw/program/hli/indicators2.asp.

The Council has gathered data to report on these three HLIs from a diversity of sources. The Council expects that this first HLI Report will provide a starting point to show readers what data is available and on what key metrics we intend to report. Future iterations should benefit from improved availability of data for the Council's current HLIs, and those HLIs that are in-development, as the region gains a better understanding of the Council's data needs.

In April 2012, the Council requested the ISAB to review the draft web-based High Level Indicators Report to determine whether it is ready to be released for public comments. The ISAB comments will be posted on the Council's website <http://www.nwcouncil.org/fw/isab/Default.asp>, attached to this memo are the comments excerpted from this review (attachment 1).

SUMMARY of ISAB's REVIEW:

The ISAB finds that the current web-based HLI report is ready to share with the region, preferably after addressing ISAB concerns with consistency of terminology, further qualifying the data, and depicting goals/benchmarks where available. The ISAB believes that HLI reporting can be refined and expanded as feedback on the preliminary set of HLIs is received, additional HLIs are defined, and data gathering and analysis are improved. Further ISAB review of a revised version of the current draft is not needed. However, future HLI reports should better convey progress toward Program goals beyond abundance, such as diversity, productivity, spatial distribution and sustainability. The ISAB would welcome the opportunity to provide advice or feedback on any future expanded HLI reporting.

ANALYSIS:

Staff has reviewed the ISAB comments pertaining to the Council's web-based HLIs report, as well as comments received from the data providers informing the HLIs report. These comments consist of corrections to the current content of the HLIs report and suggestions for improving the report both in the near-term and in the future as other information becomes available.

STAFF RECOMMENDATION:

Staff recommends that the errors identified by the ISAB and by the data-providers contacted by staff be addressed prior to the release for public comment. Suggestions for improving the report in the near-term should be considered along with suggestions received at the end of the 30-day public comment period. Suggestions for improving future versions of the report will be considered as information pertaining to these becomes available.

Attachment 1: Excerpt of the “ISAB Review of Draft 2012 MERR and HLI Reports” pertaining to the ISAB’s Comments on the draft web-based HLIs report. Full report available on the Council’s website <http://www.nwcouncil.org/fw/isab/Default.asp>

Excerpt of Executive Summary

The ISAB finds that the current web-based HLI report is ready to share with the region, preferably after addressing ISAB concerns with consistency of terminology, further qualifying the data, and depicting goals/benchmarks where available. The ISAB believes that HLI reporting can be refined and expanded as feedback on the preliminary set of HLIs is received, additional HLIs are defined, and data gathering and analysis are improved. Further ISAB review of a revised version of the current draft is not needed. However, future HLI reports should better convey progress toward Program goals beyond abundance, such as diversity, productivity, spatial distribution and sustainability. The ISAB would welcome the opportunity to provide advice or feedback on any future expanded HLI reporting.

ISAB Comments on the draft HLI Web-based Report and Supporting Documents

General Comments

To provide general comments and answer the questions below, the ISAB explored the web-based HLI report, referred to documents linked to that report, and read the Council staff’s April 17, 2012 memo to the Council’s Fish and Wildlife Committee “Staff overview of Council’s HLI Report effort” that was attached to the Council’s review request memo to the ISAB. The ISAB notes that the Council’s questions to the ISAB focus as much on whether it is clear what the draft HLI report does not cover as much as what it does cover. The Council’s questions 1 - 5 are addressed in the first 2 pages of the April 17 memo but to a much lesser degree in the web-based report.

The approach of using a web-based report with downloadable data to answer basic questions about returning salmon and steelhead is good. Likewise being able use web-links to explore the data more fully, such as the survival of outmigrating smolts or returning adults, is useful. It is also very useful that these graphs are presented with simple statements and clear graphics, linked to the actual data.

The report provides summaries of substantial information and a number of different metrics, but the utility would be increased substantially with appropriate benchmarks and synthesis statements to allow the audience to understand their significance. Understandably, the HLI are most useful if the take home message is obvious, but with these data that is not always the case. For example, increasing abundance looks good, but does not necessarily answer the full range of questions implied by the Program’s goals. Given the limitations noted for some data and lack of clear goals or other context for some metrics, the report would benefit from additional discussion. What can someone without a strong background in the Basin or in

restoration conclude from this summary? Are the overall trends very strong, consistent and encouraging, or are they mixed and uncertain? Are goals nearly met or quite distant? What are the goals beyond 5 million returning fish? It appears that 1a provides solid information allowing an interpretation of a trend and a clear goal. Others that might provide similar information are 1d, 1e, 1f, 2a, 2b, and 2c if some context or goal could be developed. For example, sustainability of natural fish populations is an obvious goal, and this can be assessed by plotting over time the number of adults returning from parent spawners (R/S) in a watershed. R/S must be greater than 1 on average to sustain a population and much greater than 1 to support harvest. R/S data for natural populations are available for some natural populations in the Snake River Basin. Given the uncertainty of some metrics without goals or context, it might be useful to present fewer metrics and state that more work is needed to develop metrics that will convey additional information.

In some cases critical details are missing. For example, on the graph of reach survival for adult salmon and steelhead (hydrosystem survival and passage), the reach over which the survival was calculated between the two specific dams was not given. The ISAB suggests that a greater emphasis be given to progress at the subbasin level and to inclusion of estuary and ocean indicators. These additions would help show how progress at the subbasin level has contributed to progress at the regional level, and how estuary and ocean effects are related to Columbia River Basin actions and responses. For example, an ocean condition indicator could indicate the degree to which ocean conditions has contributed to trends in abundance shown in some HLI graphs.

Answers to the Council's Questions

1. Does the web-based report properly describe why HLIs are adopted by the Council?

The memo (Appendix 2) clearly describes the rationale for adoption of HLIs, but the web-based report does not. It would be beneficial if the background section provided a link to download the Council's Fish and Wildlife Program document.

2. Are HLIs and supporting FW Indicators presented in a manner that effectively conveys that these are a subset of indicators that the Council is developing to properly report on the Council's Program and the status of the Columbia River Basin's fish, wildlife and habitat?

Yes, but the suggestion that "all of the indicators for Council Actions are related to habitat work" might be misleading. The indicators reflect conditions (e.g., the abundance of Chinook salmon at dams) that may respond to habitat, but are also strongly influenced by many other factors. This statement should be refined to convey the complexity of the issues that must be considered.

The focus here has been largely on abundance because that is the information that is most available. Understanding the dimensions of diversity, spatial distribution, productivity and

sustainability are essential, but will be more challenging because they require additional effort to generate or retrieve the metric or data and the path forward is not as clear. The explanations should report that these other components need to be considered, even if metrics have not been selected. Given that, the presentation is also a bit confusing with the use of “abundance” which heads the list, but then switches to the broader question of whether the Columbia River Basin species are abundant, diverse, productive, spatially distributed, and sustainable with each metric. It would be useful to use a common terminology throughout the report. Given that virtually all information addresses abundance, but not the other questions, it might serve to highlight the need for broader measures by introducing the broad questions, but limiting the summary figures to the narrower one actually addressed.

- 3. Does the report effectively convey that the biological HLIs serve to describe the larger context within which the Council’s Program aims to mitigate, restore, and enhance fish and wildlife impacted by the hydrosystem?*

Not completely. The report focuses primarily on the goal of increased abundance of salmon returns to the Columbia River at the regional level, so it does not effectively convey the larger context. The other elements of the goal will require more development in the future, as will the importance of HLIs for wild fish and fish protected under the Endangered Species Act. Given that the Council’s program attempts to enhance salmon sustainability through habitat actions and that natural salmon are more dependent on rearing and spawning habitat than hatchery salmon, the HLIs should provide some context for natural versus hatchery salmon. For example, Fig. 1a shows the combined abundance of hatchery and natural salmon. Estimates of hatchery versus natural production are not yet available for the entire Basin, although the Columbia Basin Fish and Wildlife Authority is attempting to make estimates for the past several years.

- 4. Does the report effectively convey that the Council Actions HLIs serve to track what work was performed under the Program and not necessarily reflect all work done within the Basin by other entities?*

This point is not entirely clear because it is not clearly stated on the HLI Background page. Also it is not clear that HLIs can be interpreted as a performance measure for any single entity.

- 5. Do the HLIs and supporting FW Indicators adequately and appropriately acknowledge existing objectives established by the Council or other entities? Can you suggest appropriate means to convey objectives from other entities, such as NOAA Fisheries’ survival targets for ESA-listed fish populations?*

It is encouraging to learn that other HLIs, such as the red-yellow-green indicators of ocean status (see [ISRP 2012-3](#)) and non-native species in subbasins, are under consideration by the Council.

It may be a good idea to develop a general figure showing how the Council’s program fits into the larger comprehensive strategy. Who is responsible for what? How do Council actions interface with those from EPA, USGS, and others?

The Lower Snake River Basin Compensation Program has goals for harvest, abundance, and survival of salmonids. Agencies have been tracking these metrics for a number of watersheds and species in the Snake River Basin. Please see NMFS recovery plans and recent ISRP reviews of the Lower Snake River Basin Compensation Program ([ISRP 2011-14](#)).

6. Are the data used for informing the HLIs and their supporting FW indicators appropriate?

The data seem appropriate for the metrics that are identified. Some metrics are not as useful as they might be because they do not have appropriate context and some important limitations are not clearly stated. For example, indications of uncertainty or variability in the data are not included. Limitations associated with the data need to be described as users cannot be expected to do this evaluation themselves. Clear identification of the criteria for evaluating whether the data are appropriate should be provided.

7. Are the data adequately supported by the more detailed information provided by the “table and citations link,” and is this supporting information easily accessible?

Yes, this is a very nice feature. As always, there may be some room for improvement. Generally the supporting information is useful and accessible, but in some cases it simply lists citations or other data sources (e.g., 1a and 1e have very different levels of detail and disclaimer). The level of detail provided in 1a (both the statement of the goal and the supporting citation) would be appropriate throughout. The general discussion could be more useful if it was consistent among metrics and explained why the data are considered useful for the purpose of an HLI and how they might relate to the overarching questions. The terms “naturally produced” and “wild” are both used with some metrics without clarifying if they are intended to mean the same thing. In the case of the wild smolt SARs, the apparent goal is shown but is not described in the text or heading. In the case of sockeye harvest rates, the goal seems to vary through time. The citation should include more information about the goals, rather than just referencing the Council report.

8. Does the report appropriately convey the limitation of the data used, given that for some HLIs and supporting FW Indicators the available data may not be the best we could want for the HLI Report?

More attention should be given to the limitations of the data. Perhaps a short section labeled “Limitations of the data” could be included, after the main synthesis of the meaning of the data is presented. Also consider adding a note such as the one appearing on the background page to data pages because people might skip to the data pages and not read the background info, or perhaps provide a link on each page that mentions limitations.

As currently described there is no mention of the role of ocean survival as an influence on full life-cycle survival. Ocean survival is a caveat on relationships between freshwater habitat restoration efforts in relation to any improvements in survival or abundance.

In addition to vital protection of streams and riparian areas, there are several other Council-level actions that are important as HLI development continues. For example, how many cooperative agreements for habitat protection and control of non-native species have been entered into with subbasins or counties? What type of agreements, and how many, have been negotiated for the control of agricultural pesticides and wastewater treatment effluents? Issues of similar overall importance should be considered as HLI development continues.

9. Are the graphics easy to comprehend for non-scientists? Does the ISAB have any suggestions for improvements?

The graphics are high quality and generally understandable. However, many of the metrics have no goal or other measure that can provide context to aid understanding the success of the program. For example, the miles of habitat improved means little without some understanding of how much is needed to achieve the desired effect (e.g., increasing salmon abundance, production, or spatial distribution). These are admittedly difficult measures to provide at this point, but without them the measures may not be particularly useful. It might be useful discuss whether those will be developed for all metrics in the future.

The graphs would be more useful if they were accompanied by more detailed text that interprets the trends. The HLI report would be improved if it provided both supporting and alternative explanations for the trends in the charts. For example, the report could address the observation that the trends in adult returns might be more closely related to trends in climate and ocean conditions than to performance of the Program (freshwater habitat improvements). Use of green and red in some of the charts with multiple data series might be avoided or used with stippling or symbols to aid those who have difficulties distinguishing colors. Some chart titles need to be updated to 2010, or later.

10. Regarding the comprehensive list of HLIs that the Council identified as those meriting development, are there any HLI topics that have been omitted that should be included, or that should be a priority for a follow-up effort?

For this question, the ISAB referred to the set of indicators provided at www.nwcouncil.org/fw/program/hli/indicators2.asp. This link is available through the HLI web-based report under Background.

Recently, the ISAB commented to the Council on the need to consider more than abundance in HLIs and the general emphasis of the Program ([ISAB 2011-4](#) and [ISAB 2012-2](#)). The ISAB provided suggestions about rebalancing the vision, goals, and monitoring efforts to consider the notion of diversity more fully. Given the impending changes in climate and the fact that many fish can rebound quickly from relatively low abundance given their high fecundity (among vertebrates), more emphasis should be placed on other goals such as diversity of life history and spatial distribution. These may be much more important for buffering the impending increased variability in climate and stream flow.

As summarized in our general comments above, for a measure of sustainability and life cycle productivity, a time series of adult returns per parent spawner (R/S) could be presented for a number of natural salmon populations. R/S values below 1 indicate the population is not sustainable. Values must be considerably above 1 in order to support productive harvests. Some R/S data exist for the Snake River basin and for Hanford Reach Chinook salmon.

In addition, the HLI "Coordination of Council Fish and Wildlife Program with other fish and wildlife entities, activities, and programs in the basin" should be developed. Given the recent concerns and information raised in the ISAB's Food Web Report ([ISAB 2011-1](#)) and the Landscape Report ([ISAB 2011-4](#)) it would be useful to begin careful evaluation of alternatives for developing HLIs addressing issues such as pesticides and other chemicals, changes in land use in the Basin, trends in water temperatures and turbidity, dates on which outgoing and incoming anadromous fish enter the estuary and other estuary indicators, integrative measures of food production for juvenile salmonids, the distribution and number of hybrid food webs, and human population density or urbanization.

A precise timeline date for first reporting of each approved HLI would be helpful. Since the Program plan is structured by subbasin, the HLI list might better reflect that spatial structure. Dam counts should be allocated to hatchery versus wild fish. Additional biological indicators for wild fish are needed (body size/age of adult returns, sex composition of spawners) and productivity (recruits per spawner, variation in R/S). Although ecosystem health indicators have not been approved, it is important to develop such indicators to include toxic contaminants/pollution and habitat conditions in the tributaries and on the spawning grounds (e.g., temperature, flow). Is bycatch in non-target marine groundfish fisheries (U.S. West Coast, Gulf of Alaska, Bering Sea) to be included in the "Contribution of Council's Fish and Wildlife program funded hatcheries to Columbia River Basin and ocean fisheries" indicator?

11. Is there a better way to portray the data in the HLI Report, and if so, how?

Statements about trends should be clarified by noting whether the trends are statistically significant or simply suggestive of trends. In Figure 1a, the statement concludes that salmonid counts at Bonneville Dam have increased over time, but this statement does not reflect the majority of the time series from 1938-1999 when there was little or no trend over time. The ISAB supports the use of creative graphical displays in conjunction with appropriate interpretations to aid in conveying complex information associated with Columbia River Basin data.

Can the web-link used on 1a to portray the other options of abundance of fish and wildlife be made available on the other pages too (i.e., 1b-1h, 2b-2c, 3b-3g)? These graphics are useful for presenting issues in the Basin to a non-scientific audience.

For the estuary, it may be appropriate to use area (e.g., square miles) of habitat restored, in addition to a linear measure such as miles of dikes breached.

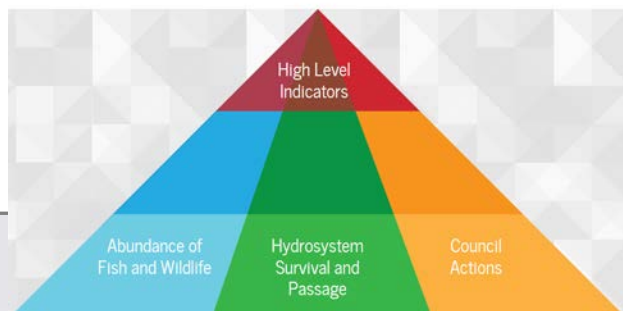
Discussion of the ISAB's comments on the HLI report



Independent Scientific Advisory Board
for the Northwest Power and Conservation Council,
Columbia River Basin Indian Tribes,
and National Marine Fisheries Service
851 SW 6th Avenue, Suite 1100
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Review of Draft 2012 MERR and HLI Reports

Review of two documents for the Columbia River Basin Fish and Wildlife Program:
(1) March 2012 draft Monitoring, Evaluation, Research, Reporting, and Data
Access Framework, and (2) the draft web-based High Level Indicators Report



Nancy Leonard
Fish, Wildlife and Ecosystem
Monitoring and Evaluation Manager

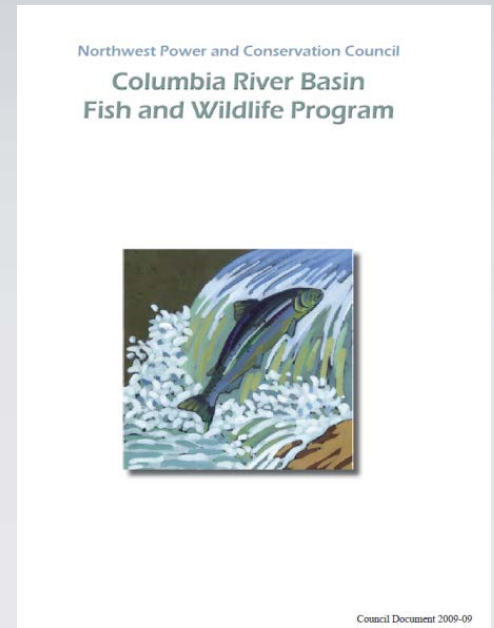
Tony Grover
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Background

- 2009 FW Program calls for
 - A commitment to report frequently on Program progress
 - Adopting and periodically updating high-level indicators



Background

- 2009 FW Program calls for

- A commitment to report frequently on Program progress
- Adopting and periodically updating high-level indicators

- To date:

2008

- First draft of Council HLI
- 2 public comment periods

2009

- Council adopts 3 HLIs
- Council approves draft program management questions

2010

- ISAB review of HLI data
- draft HLI pamphlet produced

2012

- Draft HLI website produced
- ISAB review of HLI website
- Data experts' review of HLI website

ISAB Comments on HLI Website

- HLI report is ready to be shared with the region
 - preferably after addressing ISAB concerns (e.g., terminology)
- HLI reporting can be refined and expanded over time
- Future HLI reports should better convey
 - progress toward Program goals beyond abundance, such as diversity, productivity, spatial distribution and sustainability.
- The ISAB would like to provide feedback on future expanded HLI reporting.

Data Experts' Comments on HLI Website

- Contacted WDFW, ODFW, IDFG, FPC, NOAA, CBFWF (SOTR), BPA, and Sitka Technology Group (Taurus)
 - General comments to improve overall content
 - Graph specific comments related to data portrayed, caveats, references, and explanatory text
 - Suggestions for additional text and graphics



Status of Data Experts' & ISAB Comments on HLI Website

- Status of comments

Already addressed on website

Will be addressed once have public comments

- Comments pertained to:

- Data updates
- Data caveats and referencing of data sources
- Graph headings and axis
- Clarification and consistency in terminology
- Explanatory text additions and clarifications
- Conveyance of HLIs still in-development
- Suggestions of additional graphics

Staff Recommends

- Staff suggests releasing for 30-day public comment period revised version that
 - Incorporates corrections identified by ISAB and data experts
 - Consider other suggested improvements along with public comments

Staff Suggested Next Steps

June

- 30-day comment period for HLI website

July

- All comments addressed (public, ISAB, data experts)
- FW Committee updated by email

Aug.

- 2012 HLI website posted

ongoing

- Continue developing and refining HLIs with managers
- Incorporate new indicators as become available