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Federal Caucus Comments Record
c/o BPA-PL
707 W Main Street, Suite 500
Spokane, WA 99205

This letter sets forth the National Wildlife Federation's (NWF) comments on the Federal Caucus's Draft All H Paper. NWF is a national conservation organization with regional offices throughout the country including our Western Natural Resource center, which is located in Seattle, Washington. NWF's Seattle office works to protect salmonid populations throughout the Pacific Northwest. NWF appreciates the opportunity to comment and hopes that our views will assist the agencies in crafting a recovery plan for these listed salmonids.

We need not remind the Caucus of the imperiled state of Columbia and Snake River salmon, their importance to citizens of the Pacific Northwest and the nation for their cultural, spiritual, economic, and recreational value, and their pivotal role in maintaining the ecological health of the Columbia River Basin. You heard that loud and clear at the public hearings throughout the region in February and March.

The take-home message from those hearings was unambiguous -- it is your responsibility to take immediate, meaningful action to recover Columbia and Snake River salmon and steelhead, and for Snake River stocks the suite of actions must include removal of the four lower Snake River dams. Removal of these dams will also benefit salmonid stocks on the Columbia mainstem. Water quality will improve through decreased temperature and dissolved gas and overall water quantity will improve, as well. The public will no longer tolerate delay and indecision from the federal agencies charged with protecting the public interest in healthy, harvestable salmon and steelhead populations.

Our comments are organized as follows. First, we comment on the adequacy of the All H paper in light of its stated objective, highlighting critical flaws that must be addressed in the final document. Second, we propose a specific course of action with respect to Snake River stocks. Third, in two attachments we provide detailed comments on the science underlying the Draft All-H Paper and the economic analysis in the Draft.

I. Flaws in the Draft All H Paper

1. Failure to define "recovery" goals.

Generally, we agree with the stated conservation goals (except as discussed below) set forth in pages 23-24. Specifically, recovery must equate to populations that: (1) ensure long-term sustainability of the stocks; (2) provide for the meaningful exercise of tribal fishing rights as well as provide for commercial and sport fisheries; and (3) provide key ecological functions necessary for healthy ecosystems in the Basin. Unfortunately, the Draft fails to take the essential next step – defining quantitatively stock-specific population levels that meet those goals. The importance of this cannot be overstated. Without this specificity, it is virtually impossible for the region to engage in "an honest and constructive dialogue" (p. 1) about salmon recovery – the stated purpose of the Draft All-H Paper. Accordingly, the final must include, with as much specificity as possible, the size and distributions of the populations necessary to meet the goals.

We understand that the National Marine Fisheries Service has not yet fully developed this information for each ESU, but intends to do so using the Viable Salmonid Population construct. If this is true, then abundance estimates based on the best available data should be used pending completion of the VSP work. It is not an excuse to say that the work has not been completed and then use a clearly inadequate benchmark – extinction avoidance – to assess recovery options. The need to set recovery goals for Snake River stocks is particularly acute given the need to make a decision about dam removal now, and this should be among the Caucus's highest priorities as it finalizes the All-H Paper.

2. Failure to adequately distinguish between what is needed to avoid extinction and what is necessary to achieve "recovery".

This is a fatal flaw in the document. The final All H Paper must evaluate the management options in light of the recovery goal, not merely whether they are likely to avoid extinction. The draft fails to do this, and leaves the reader with the impression (mistaken) that "recovery" is achieved merely by meeting the population growth rate deemed necessary by the CRI to avoid extinction. This is, of course, false. Recovery will require much greater gains than that necessary to merely avoid extinction.

This flaw, if not remedied, will mislead the public and decision-makers, and has the potential to cause significant and potentially unnecessary economic hardship. For example, the Draft suggests that either dam removal or major, new harvest reductions of Snake River fall chinook may be sufficient to achieve

the "the needed change in growth rate." (p. 80). But that growth rate pertains to avoiding extinction, not recovery. Harvest reductions will not achieve the recovery goal.

Thus, based on the information provided in the draft All-H paper, a decision could be made to implement major new harvest restrictions in lieu of dam removal, when, in fact, they will not achieve recovery. This may lead to the unfortunate situation where the dams are removed only after fishers have experienced major economic harm, which would not have happened if the original decision had been based on the proper goal. This unnecessary cost to the fishing community would clearly be inconsistent with the stated socio-economic objective to "[c]oordinate restoration efforts to avoid inefficiency and unnecessary costs." (p. 24)

3. The 25-year timeframe for achieving "recovery" is arbitrary, inconsistent with law, and likely to result in further delay in meaningful recovery measures; the goal should be to meet the recovery goal as soon as possible while minimizing economic harm.

The only purpose served by qualifying restoration of naturally sustained fish populations with "within 25 years" (p. 23) is to provide room to avoid making tough decisions now. That is patently unacceptable. Although it may take some populations 25 years or more before they are healthy, the federal government has a legal obligation to immediately implement effective recovery measures. Neither the Endangered Species Act nor the federal treaties with the Columbia River tribes permit such delay, and citizens of the region should not be subjected to the enormous uncertainty caused by inaction.

4. Performance standards are not an adequate substitute for specific recovery measures.

At various points in the Draft, reference is made to the use of performance standards to monitor the success of recovery options. While we could support the use of performance measures as part of a monitoring program, they cannot be used in lieu of specific recovery actions.

For example, it is unacceptable to say that a decision on removal of the four lower Snake River dams will be delayed until other measures are allowed a chance to achieve specific performance standards. Instead, there must be adequate evidence at the time of selection that the "other measures" will, in fact, likely result in attainment of the performance standards in the requisite time period. Merely meeting performance standards does not mean recovery goals have been met. There must be a connection between the performance standards and ultimate recovery goals.

5. The failure to identify specific habitat measures and evaluate their biological efficacy must be remedied.

As acknowledged in the Draft All-H Paper, it does not define specific habitat measures or evaluate their feasibility. (p. 34). Perhaps generally identifying some habitat options has been effective at "stimulating regional dialogue," but we still do not know what exactly those options are and whether they are likely to work. Without that detail, the relative merits of the various options cannot be evaluated.

Abandoning known, effective recovery strategies – such as removal of the four lower Snake River dams to restore Snake River stocks – in favor of speculative habitat restoration efforts is unacceptable and irresponsible. The Federal Caucus must implement known, effective recovery actions now, particularly given the high risk of imminent extinction to several stocks.

We want to be clear, however, that we believe there is a need for major improvements in habitat throughout the Basin and that such improvements are essential to ensure recovery. For example, there is an immediate need to improve stream flows in tributaries throughout the Basin that provide spawning and rearing habitat, and we believe the Federal Caucus must move forward aggressively and immediately with implementation of such measures and monitoring results. Of course, when coupled with known, effective measures, like removal of the lower Snake River dams, such measures would increase the likelihood of achieving recovery and doing so sooner.

6. The failure to provide specific cost estimates for potential habitat measures precludes a meaningful comparison of alternatives from an economic standpoint.

In addition to being necessary to evaluate their efficacy in terms of species conservation, habitat actions must be defined to enable the public and decision-makers to ascertain their economic impacts. For instance, the Aggressive Non-Breach alternative calls for intensive habitat restrictions on forestry, mining, agriculture and would require additional flow augmentation from the upper Snake River basin. Yet the only cost specifically identified for this alternative is \$100 million in lost logging revenue from federal lands (p. 39). Of course, the actual cost for this Alternative would include many other costs, such as the lost of logging revenue from private and state lands, new buffer restrictions on ranch and agricultural lands, road decommissioning, flow augmentation, etc.

Flow augmentation from the Snake River illustrates the importance of providing clear, accurate economic information on the choices facing the region. If the lower Snake River dams are not removed, the best available science shows that at least an additional 1 million acre-feet of flow augmentation water will be

needed from the upper Snake River Basin. The Bureau of Reclamation estimates that flow augmentation of that magnitude would cost between \$151.3 million and \$1.3 billion annually, and result in the loss of 4,203 – 6,530 jobs.

Robust economic information is essential for an informed public dialogue and sound decision-making. Unfortunately, the failure to provide this information in the draft has fueled public misconceptions about the choices before us. This problem is particularly acute with respect to the issue of whether to remove the four lower Snake River dams. The hearings made it abundantly clear that the public is not well informed about the cost of keeping the dams. By our calculations, based on available data, the cost of keeping the dams would greatly exceed the cost of removal, and that only includes measures necessary to stave off extinction of Snake River stocks. It is therefore essential that the final document include robust economic information on the various management actions under consideration.

7. The lack of economic mitigation strategies to ease the impact of lower Snake River dam removal precludes an accurate assessment of recovery options for Snake River stocks.

The Draft All-H paper also fails to discuss in any meaningful way opportunities to mitigate the adverse impacts that would result from any of the four alternatives that have been described, and acknowledges this flaw. (p. 27). This is disappointing, especially considering the fact that the Draft All-H paper says one of the primary goals of a regional fish recovery plan should be to "implement salmon and steelhead conservation measures in ways that minimize adverse human effects" (p. 2), and identifies mitigation of social and economic impacts as an objective (p.24).

Specific mitigation/transition opportunities that should be evaluated include, but are not limited to:

- (1) Shifting from lower Snake River barge transportation to a rail/truck alternative. We are attaching for the record a report prepared by Dr. G. Edward Dickey for American Rivers which addresses this very issue and explains how this could be accomplished while keeping affordable shipping rates;
- (2) Retrofitting the existing Ice Harbor irrigation system to keep presently irrigated land in production. Even with the Corps vastly inflated cost estimates for such a retrofit, it would be a relatively small portion of the overall dam removal bill, and would save many jobs in that locality; and
- (3) Other costs to the Lewiston community relating to the impacts of a changing economic base and job restructuring.

If these opportunities were presented and analyzed, it would quickly become evident that dam removal need not cause severe economic hardship. In fact, it would result in a long-term increase in employment in the affected region, as discussed further in Attachment #2 to these comments. Accordingly, the final All-H paper must present and examine these economic mitigation opportunities.

8. The Draft All-H Paper fails to adequately address the long delay before most habitat measures, if actually implemented, would provide significant biological benefits.

Although some habitat measures would provide substantial, immediate benefits once implemented, such as restoring flows to severely dewatered reaches, most measures, if politically feasible, will likely not yield substantial benefits for at least 15 years. Specifically, the Draft All-H paper states: "The bulk of prioritized habitat recovery actions would be completed in the next 10-15 years." (p.35). On that trajectory, the intended biological benefits would then likely not be realized for close to 20 years, if they even proved successful. This is very problematic, particularly given the high risk of extinction to several stocks, including Snake River spring/summer chinook and sockeye.

It should go without saying that such measures cannot be relied on as the primary recovery vehicle, and should be used only to complement actions with a high likelihood of success, such as removal of the four lower Snake River dams.

9. Further harvest restrictions while perhaps necessary to protect some of the most imperiled stocks, will do relatively little to achieve recovery.

Harvesters have shouldered the majority of the burden both in terms of the economic costs of dwindling salmon runs and in terms of restrictions imposed to increase those runs. Despite substantial reductions of in-river and ocean fisheries over the last two decades, many Columbia basin stocks have continued to decline.

For Snake River stocks, the Draft All-H paper acknowledges that further harvest reductions of spring/summer chinook will not yield any significant benefits. For steelhead and fall chinook, NMFS postulates that major new harvest cuts (either 50% in ocean and in-river fisheries or 75% in one or the other) could potentially stave off extinction, but they clearly would not lead to recovery. Of course, slashing harvest to that extent would violate both the treaty fishing rights of the Columbia Basin tribes and the Pacific Salmon Treaty, which is unacceptable. It would also economically devastate the salmon fishing industry and many fishing dependent communities, an impact that has not been analyzed by the Caucus.

The final All-H Paper must analyze the economic impacts of fisheries closures, including total income and job loss.

Finally, it bears emphasis that the "harvester" taking the most fish is the federal hydropower system. (Harvest Appendix at 14). Removing the four lower Snake River dams would eliminate substantial adult mortality, as well as boost juvenile survival.

10. Hatchery reform is in its infancy and must be viewed as an ongoing experiment, not relied on as the means to recover Columbia Basin stocks.

As the Draft All-H paper points out (p. 52-66) it will take many years before we know the extent to which innovative hatchery practices will assist in wild fish recovery. Clearly, hatcheries cannot be relied on as a primary restoration tool, given the enormous uncertainties. It is therefore impossible to ascertain the adequacy of the hatchery options presented – either on their own or in conjunction with actions in the other Hs – relative to the recovery goal. The final All-H Paper should make this point clear and acknowledge that hatcheries cannot be relied on as a major recovery tool.

11. Equitable apportionment of the recovery burden should be added as a socio-economic goal, and should take into consideration users that have shouldered the burden in the past.

We were pleased to see in the Draft All-H Paper the commitment to honor treaty obligations with the Columbia Basin tribes and to honor the federal government's trust responsibility to protect tribal trust resources. (p. 21). We strongly support these commitments. Conspicuously absent, is a commitment to equitably distribute the recovery burden among different users of the salmon resource. Historically, fishers have shouldered the bulk of the recovery burden through massive harvest cuts, particularly in the last two decades. In contrast, the federal hydropower system continues to cause the vast majority of human-caused mortality in Columbia Basin stocks and nothing has been done to limit this harvester.

Selection of recovery actions should include this historical inequity in the conservation burden as a factor. Clearly, potential management actions – such as further deep cuts in ocean and in-river harvest – that would continue to place the burden of recovery on the shoulders of those who have carried it in the past, should be avoided if there are other, more effective alternatives available. Accordingly, recovery actions should be focused on the hydro and habitat Hs.

II. Recommendation for Recovering Snake River Stocks

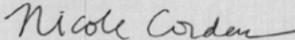
In contrast with the analysis of specific recovery measures for most Columbia River ESUs, the analysis of potential recovery measures for Snake River stocks is much more mature and robust. A great deal of high- quality scientific analysis has been completed, and we have a much better understanding of the potential efficacy of specific recovery measures under consideration, despite remaining uncertainties. The bottom line for Snake River salmon and steelhead is this:

- (1) Removal of the lower Snake River dams is by far the best recovery option for Snake River salmon and steelhead and the least risky;
- (2) Only removal of the lower Snake River dams would greatly expand available spawning habitat for fall chinook and lead to recovery of this stock;
- (3) The cost of keeping the lower Snake River dams is likely to be significantly greater than dam removal because of the magnitude of the habitat and hydro measures that would otherwise be necessary;
- (4) The Corps's analysis of the economic impacts of dam removal show that they are manageable and need not result in significant economic hardship for rural communities;
- (5) No suite of actions that does not include removal of the lower Snake River dams has a high probability of achieving the recovery of listed stocks; and
- (6) The need to implement effective recovery measures is immediate, as several Snake River stocks are at high risk of imminent extinction.

Given these facts, the only scientifically credible and legally defensible course is to proceed immediately with lower Snake River dam removal to recover Snake River stocks. The final All-H Paper should reflect this reality. We are fully cognizant that dam removal may not be a silver bullet and must likely be augmented with measures in the other Hs to achieve the recovery goal, but it is nonetheless an essential action that must be implemented as soon as possible. As the Independent Scientific Advisory Board has noted, further delay in implementing effective, major recovery measures is unacceptable.

We appreciate your consideration of our comments.

Sincerely,



Nicole Cordan
Regional Organizer
National Wildlife Federation

ATTACHMENT #1

Science Comments

We have several substantive comments regarding the National Marine Fisheries Service's (NMFS) Cumulative Risk Initiative (CRI). Many of these comments were first brought forward in a letter submitted by Trout Unlimited, American Rivers, and Earthjustice (1/25/00), and in a report entitled "Seven Questions about the Cumulative Risk Initiative," (Seven Questions Report) prepared for the above-listed groups by Dr. Gretchen R. Oosterhout of Decision Matrix, Inc. (1/23/00). We have summarized the seven substantive comments in the section below, and submit the entire document into the record.

While NMFS has responded to some of the conservation group questions regarding the CRI, the All-H paper must be amended to reflect and incorporate these concerns. The CRI is based on models that are currently flawed, and therefore the conclusions drawn from the application of such models in the All-H paper must be reassessed and reconfigured where necessary. In sum, the Seven Questions Report emphasized the following shortcomings:

- The CRI focuses extinction risk analyses on an analytical quasi-extinction threshold of one fish – an analysis threshold that is lower than values typically used in extinction risk assessment, and which causes the risks of extinction to be underestimated. This threshold is too low as pointed out by many scientists in the region, and therefore seriously underestimates the extinction risk and overestimates the projected time to extinction.
- The CRI models ignore or downplay population and environmental trends, focusing instead on average population growth rates despite the fact that Snake River populations have been declining at an accelerating pace since the early 1980s.
- The CRI models were revised in early-2000 to ignore post-1990 population information. The NMFS response to the Seven Questions Report indicates that the agency agrees that utilizing the most recent data is important, and that analyses will be updated in a timely manner.
- The CRI relies on a questionable sensitivity analysis method which sources they cite say should not be used; the chosen method is more appropriate for ranking variables according to the way mortality is allocated rather than for sensitivity analysis.
- The CRI underestimates post-Bonneville mortality, and over-estimates first year mortality instead of using values from available literature and PATH.

- None of the CRI reports mention model validation, or offer explanations regarding how choices were made for parameter values.
- Despite the fact that the CRI is supposed to be a risk initiative, it uses almost no standard risk assessment tools.

In addition to the issues raised in Seven Questions Document, SOS would like to emphasize some of the other errors in the CRI that could impact the conclusions reached in the current version of the All-H paper. First, there are a number of areas in which the CRI conclusions used in the All-H paper were based on erroneous assumptions. For instance, All-H conclusions were based on CRI modeling that assumed both males and females produce eggs, thus doubling the estimated number of offspring. We understand that this mistake has been recognized and the models adjusted; any part of the All-H paper affected by these changes should be amended accordingly.

Similarly, the CRI models- both during initial model runs and currently – assume that all age fish have the same fecundity. However, younger fish produce fewer eggs while older fish produce more, and while the CRI models assume that half the spawners are always female, reality and available information dictate that approximately 10% of 3-year old and about 67% of 5-year old spawners are female. The CRI should be re-calibrated to better incorporate what we do know about Snake River salmon and steelhead, and ensure that the All-H paper conclusions are based on the best available data and not mere generalities with no basis in fact.

Second, the CRI models used, and continue to use, smolt-to-adult ocean survival data for Oregon coho to estimate survival through the estuary and early ocean for spring/summer chinook. The CRI also uses Alaska sockeye data to calculate adult ocean survival for these fish. By using the Oregon coho and Alaska sockeye ocean survival numbers, the CRI models produce smolt-to-adult return rates of over 3%, which is much greater than has been seen since before the Snake River dams went in. The Corps of Engineers and NMFS in the A-Fish Appendix cite SARs of 1% for the same period. The Idaho Department of Fish and Game reports even lower SARs, around .3%. The CRI thus overestimates smolt-to-adult survival by more than threefold. Obviously, this affects the estimated dam-related mortality impacts and undervalues the benefits of major changes to the hydro system.

Third, the CRI uses two models, the Dennis model to estimate extinction risk and the Leslie Matrix model to estimate benefits of various management actions across the four H's. Obviously, λ from the Dennis model should be very nearly the same as λ in the Leslie matrix, yet because of computational and analytical errors, λ s are 18.4% greater in the matrix models used to evaluate management options, than they are in the extinction models. That means that the Leslie matrix

results used for evaluating management options in the All-H paper assume the populations have been increasing, on average, at 12.7% per year, when corrected models that NMFS was already using before the All-H paper came out indicated that these populations have actually been declining at 13.7% per year.

Fourth, the CRI models assume that egg-to-smolt survival is less than 2% for most of these populations, when PATH and many other studies have shown that egg-to-smolt survival for Snake River spring/summer chinook should be around 5%—more than twice as high. This is one reason why they conclude the best opportunity for saving these fish is to improve spawning and rearing habitat quality. The Federal Caucus claims that improving smolt migration survival would have negligible effect on population growth, claiming in the All-H paper that the CRI models show that an increase in smolt migration survival of 5-10% would produce no more than 1% increase in average population growth rate. Again, doing this analysis with the corrected models available on their website shows that this migration survival increase which they say would have negligible benefit could actually produce an increase in λ of 4.15%. That would get them 1/3 of the way to the improvement NMFS says is needed.

Table 1 shows discrepancies between what the All-H paper claims the federal models show and what the latest versions of the models actually show.

Table 1. What NMFS says (in the All-H paper) their models show, and what their current models actually show.

| Variable | What NMFS says their models show | What the latest CRI models actually show (12-13-99extinct.xls and 12-13-99matrix.xls) |
|--|--|---|
| Increase in annual population growth rate required to reduce probability of extinction to 10% in 100 years | 12% (All-H paper, p. 72) 14% (A-Fish p. A8-13) 14% required for recovery (A-Fish p. A8-21) | 67% |
| λ (average annual population growth rate) | 1.127 (A-Fish p. A8-18): populations are growing an average of 12.7% per year | 0.987: populations are declining at 13% per year |

Finally, while the CRI has emphasized the use of simple models using the most reliable data, they have discounted the model developed by Dr. Phil Mundy, which used spawning ground counts, probably the most reliable and consistent data available, to develop an extinction time frame. However, given the latest spawning ground counts, and comparing Dr. Mundy's model with the more elaborate CRI analysis, it seems that the CRI emphasis on simplicity may have

some merit. Dr. Mundy's report – which was prepared for Trout Unlimited – is attached for your reference.

In the analyses on which the DEIS and All-H papers were based, they were predicting extinctions in 2049 for Marsh Creek, and 2316 for Sulphur Creek. Mundy's model predicted that Sulphur Creek and Marsh Creek populations would drop below 15 sometime around 2001 and 1998 (respectively). They both hit zero in 1999. Table 2 compares the Mundy model predictions with the latest predictions from the CRI (note that they are different from the predictions on which the All-H paper was based, but not in any systematic way; that is because NMFS has acknowledged that there are errors in the most recent models). Also shown in Figure 1 is a graphical comparison of the same thing.

Table 2. Comparison of Mundy's predictions and the CRI's predictions.

| Population | 1999 spawners | Mundy predicted year of extinction (<=15 spawners) | Latest (12-13-99extinct.xls) CRI predicted year of "extinction" (<=1 spawner) |
|-----------------------|---------------|--|---|
| Marsh | 0 | 1998 | 2073 |
| Johnson | 49 | 2015 | 2397 |
| Imnaha | 282 | 2003 | 2140 |
| Bear Valley/Elk Creek | 72 | 2007 | 2534 |
| Poverty | 153 | 2134 | 2205 |
| Sulphur | 0 | 2001 | 2130 |
| Minam | 96 | 1998 | 2248 |

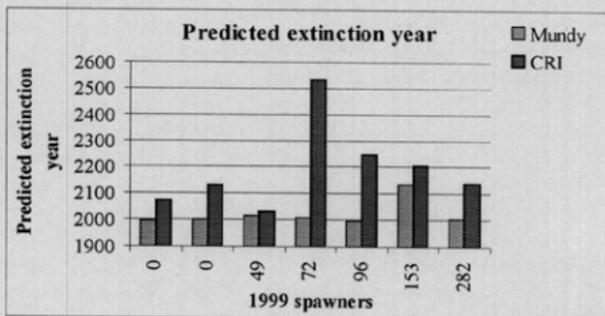


Figure 1. Predicted year of extinction and current spawner counts, Mundy's model versus the CRI.

NWF submits that NMFS must immediately remedy the aforementioned flaws in the CRI analysis and base its final All-H paper on the best scientific information available.

The All-H paper selectively uses the information and analyses contained in the Plan for Analyzing and Testing Hypotheses (PATH) report. The All-H paper systematically utilized PATH analyses for the hatchery, harvest, and hydropower H's, and yet either selectively presents or disregards much of the analyses applicable to habitat. This oversight, whether intentional or not, is troubling. The PATH habitat analyses – both retrospective and sensitivity – are key to ascertaining the possible contributions habitat protection and restoration can make to Snake River spring and summer chinook recovery.

The PATH retrospective analysis on freshwater habitat assumed that changes in the quantity and quality of freshwater spawning and rearing (FSR) and pre-spawning (PS) habitat may have contributed to production declines in some index streams. However, the retrospective analysis concluded that changes in adult-to-smolt survival – presumably related to the quantity and quality of FSR habitat – do not appear to be of great enough magnitude alone to explain post-1974 spring and summer chinook index stock declines. Simply put, PATH findings emphasize that aggregate Snake River spring/summer chinook productivity and survival does not appear to have declined since the mid-1970s.

The PATH sensitivity analyses regarding the possible benefits of habitat improvement measures – with all other Hs held constant (i.e., status quo) – found little appreciable change in meeting the survival and recovery standards. In other words, there was little bang for the restoration buck in terms of increasing egg-to-smolt survival. Only in streams with the most degraded

habitat was there a measurable change in probabilities of meeting the survival and recovery thresholds, and then only for small sub-populations. These changes were much less than those achievable for the entire ESU if the four lower Snake River dams were removed.

The next version of the All-H paper must better highlight the PATH habitat analyses. Based on PATH habitat information, as well as information prepared by Idaho Department of Fish & Game, which compared five sub-populations in varying habitat conditions and found that they all experienced similar dramatic declines since the 1960s, it is clear the habitat improvements, although needed in the lower reaches of some tributaries and on certain national forest and other federal lands, are not the key to recovery for spring/summer chinook and steelhead in the Snake Basin.

The Draft All-H Paper is also flawed in its use of the CRI's inappropriately high "D" value of .8. This high "D" value suggests that transported fish do not experience significant delayed mortality after release below Bonneville. This is inconsistent with the PATH findings of "D" values around .4, which suggests that transported fish do experience significant delayed mortality. The mere acknowledgment of this difference in the Draft All-H paper is not adequate. In essence, the CRI has substituted its judgment for that of PATH. The PATH conclusions regarding "D" values were based on a systematic process of internal and external peer review, and were in fact supported by an internationally recognized Independent Scientific Review Panel (ISRP).

Accordingly, the final All-H Paper should use the PATH "D" values in its analysis of hydrosystem alternatives. If the PATH "D" values are not used exclusively, then at a minimum the final All-H Paper must include analyses using both "D" values in order to adequately capture the range of possible outcomes.

Finally, hydro system options that rely on fish transportation instead of restoring a more normative river are not consistent with the best available science. Over 20 years of intensive fish transportation has failed to stem the decline of Snake River stocks. The Independent Scientific Group, in its seminal *Return to the River* report, clearly stated that restoration of a more normative river – not more elaborate fish transportation systems – is the key to recovery. This is consistent with the CRI Team's conclusion that further improvements in transportation and collection facilities at the lower Snake River dams would do little to recover Snake River stocks. Thus, continued reliance on barging as a primary recovery tool is inappropriate and inconsistent with the evidence.

Attachment #2

Economic Comments

The Draft All-H paper has no comprehensive, coordinated economic analysis. The Draft All H paper states: "Our review of impacts other than biological impacts is cursory. These other impacts will play a significant part in any options finally chosen. Inadequate time was available, once the options were formulated, and many options are not sufficiently specific, to adequately analyze their economic, social, and cultural impacts. Nor did we analyze and recommend mitigation measures for the various options. Such information will be necessary to inform any long-term decision." (p. 28) Without such analysis, it is impossible to evaluate or select options or alternatives. The first need, related to economic issues, is to pull together the fragments of economic analysis presented in the appendices of each "H", to augment those with information on impacts and mitigation opportunities, and to group comprehensive cost estimates according to specific options and alternatives.

Much of the analysis that is in the Draft All H Paper comes from information included in the Corps of Engineers DEIS, which in turn relied on the DREW process. We have attached the analysis of the DREW process conducted by ECONorthwest for Trout Unlimited and Earthjustice titled, "An Economic Strategy for the Lower Snake River." We stand by that document, which concludes that the Corps of Engineers underestimated the benefits of dam breaching, ignored the changing nature of the Northwest economy, and did not adequately address issues relating to subsidies. The ECONorthwest study found that bypassing the dams will generate large and widespread positive employment and other economic impacts, that it offers an opportunity to improve economic efficiencies in local, regional and national economies and that measures to address the negative impacts to breaching the dams are both affordable and feasible.

Since the publication of the Draft All H paper and the DEIS, ECONorthwest has been preparing comments on the DEIS. While those comments will not be available in time to be included in this document, they are still relevant and should be reviewed and addressed in the final All-H Paper. In addition, we have found additional flaws in the DEIS, including a failure of the Corps to use standard price elasticity calculations to estimate the increased cost of electricity to residences and businesses. Incorporating the flawed economic analysis of the Corps into the All H paper does not present a true picture of the impacts of dam breaching on the regional economy.

The following are specific comments relating to the economic references in the All H Draft.

In order to present a more realistic picture of economic impacts to the region, benefits, particularly those related to specific hydropower alternatives and habitat strategies, must be included at realistic levels. For example, partial dam removal has benefits in habitat (see below) and recreation (see DEIS) that do not occur under other hydropower options.

Also missing is the relative cost of delay. These may include both increasing costs for actions extended over time and increased value for those actions that would have immediate benefit. This may require a type of "cost-effectiveness" value, as actions with immediate benefits have higher biological value and actions encompassing delay have additional extinction risk. The possible complexity of such a calculation should not lead to the issue being avoided.

Indirect costs: the Habitat appendix (p. 103) states that indirect costs -- the costs and/or benefits that would occur as a result of habitat actions -- are not included. Estimates in Framework documents suggest that the amount of land and land-users affected by non-dam removal options would be far greater than those affected by dam removal options. Some effort must be made to assess indirect costs, such as land-use changes, job and income impacts. These are critical decision factors.

Habitat benefit of lower Snake dam removal: the DEIS states that restoring a free-flowing river would uncover 5326.7 hectares (13,162 acres) of river surface area that salmon need to thrive again in the Lower Snake and would increase bio-mass in the lower Snake by 70 percent. (*DEIS Appendix I, p. 13-50*). Dam removal would also uncover 34,000 acres of riparian land that would be managed for habitat (*DEIS p. 15-12*). These benefits are unavailable by any other action. Their value, both biologically in providing migrating and feeding habitat for all species, and spawning and rearing habitat as well for fall chinook, and economically as an investment in mainstem habitat improvement, should be accounted for.

Historical vs. effective spending: Past habitat spending estimates per basin (*Habitat Appendix p. 104*) are described as representing "neither the amount requested nor the need for funding, both of which are significantly higher than was funded." Yet those figures are subsequently used to estimate needed spending. A level of habitat action that would be effective should be chosen, and estimates based on the effective amount, rather than past expenditures. A later paragraph states that implementation costs are accurate according to past expenditures but "likely fall significantly short of the total need in the basin." (p. 105) The estimates represent the cost of continued failure unless they are brought in line with what is needed in the basin.

The same section states that "not all subbasins are the same, and that some have greater needs than others," but makes no attempt to assess whether the

basins upon which sample data are based are representative. Some measure -- perhaps physical extent, number of streams or watersheds, approximate condition of streams -- should be considered to determine whether the sample subbasins are representative. Similarly, where the Appendix states that "The number of watersheds requiring significant assessment is unknown so an estimate is provided," (p. 105) a rationale for that estimate should be provided. Nor do either the Appendix or Draft All H papers distinguish properly between mainstem and subbasin actions. Assuming that the cost of mainstem actions is the same as that of subbasins may significantly underestimate the cost and extent of mainstem habitat actions.

The current estimates assume either 60 or 30 percent of basins would be assessed, and that substantial portions have been already. Neither option deals with 100 percent of watersheds. If there is a rationale for excluding 15-20 percent of watersheds, it should be stated. If not, then a case should be developed that covers all watersheds. The alternate case assuming 50% of watershed assessments already completed appears optimistic. Again, if there is evidence that such a high rate of completed assessments exists or will exist soon, it should be presented. Otherwise, the estimate is invalid.

Harvest Reduction Costs: The All H paper (p. 51) concedes that its \$25 million annual value for the Columbia basin salmon and steelhead fisheries may be low because "economic incentives and value for fisherman may not be based solely on the value of the catch." This estimate appears to be quite low, and does not account for potential increased fishery values if effective recovery options are implemented. The indirect economic and cultural impacts from further harvest reductions, particularly effects for Tribes and coastal communities, must be included in any economic assessment of harvest reductions.

Hydro Section Economic Impacts: The economic summary of the All H paper's Hydropower section (p. 74), states that "System operation related economic effects have not been evaluated at this time, including transmission system reinforcement requirements or effects and additional upper Snake River water acquisition costs." Yet an earlier reference in the section acknowledges that the Bureau of Reclamation has identified specific acquisition and other costs related to Snake River flow augmentation. Those costs, between \$151.3 million and \$1.3 billion annually, and resulting in the loss of 4,203 - 6,530 jobs, should be included in any hydropower alternative that does not include lower Snake River dam removal.

The several estimated costs associated with partial removal of lower Snake River dams, particularly those for transportation and irrigation, are high, and the value for the recreation benefit is too low. We will submit detailed comments on the Army Corps's DEIS addressing these flaws, and we incorporate those comments here by reference.

The avoided costs figure cited does not include costs associated with Clean Water Act compliance (estimated at approximately \$125 million/year) and others that would be required if dams remain in place. Nor do the costs associated with partial dam removal account for reduced impacts that may be possible with targeted transition investments and mitigation.