Department of Energy

Bonneville Power Administration
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ENVIRONMENT, FISH AND WILDLIFE

October 9, 2002

In reply refer to: KEW

Mark Walker, Public Affairs Division Director
Northwest Power Planning Council
851 SW Sixth Ave. Suite 1100
Portland, OR 97204

Re: The IEAB Hatchery Analysis

Dear ~~Mr. Walker~~ Mark:

Upon reviewing Phase One of the financial analysis, several of the issues raised create some concern and warrant comment. However, in general the current analysis may serve as a useful future tool to help the region gain a clearer picture into the fiscal variability amongst hatcheries on the Columbia and Snake Rivers. The comments in this review are directed with more specific emphasis to the "Findings and Recommendations" generated by the analysis.

Cost Per Fish

Older established hatcheries were designed with a goal of minimizing cost per pound of fish. Hatchery managers were evaluated in part by how cheaply they could rear and release smolts. This type of incentive lead to practices utilizing cheaper feeds, acquiring automated systems, choosing stocks well suited to hatcheries, and developing greater efficiencies in spawning and rearing practices, all of which have been beneficial to reducing costs in the older facilities.

Artificial production facilities that have more recently come on line, and those facilities that are proposed for development may not be able to utilize some of the same cost effective technologies. Depending upon their objective, they may instead seek to reduce their rearing densities, placing a stronger emphasis on juvenile fish survival rates, thereby lessening the chances for density dependent causes of mortality and increasing the potential for smolt to adult returns (SAR's) in target streams. To implement this type of practice, the release facilities may be less concentrated in area and smaller in size, thus excluding some of the cost efficient technologies found in larger facilities, which may result in higher labor costs.

The numbers of fish to be released by a particular hatchery may vary greatly as concerns arise over competition issues between wild fish identified under the Endangered Species Act (ESA) and hatchery fish. In addition, several of the production facilities may have extensive monitoring and evaluation (M&E) programs in progress that are required by a regulatory agency to maintain

their operation. The cost of an M&E program can be significant when evaluating overall operational costs of a hatchery. This element of cost was not addressed within the report.

In section D of the Phase One analysis, the " Findings and Recommendations" lists six findings. Each of the findings will be addressed briefly as to the disagreement with or general acceptance of the finding.

Findings

"The overall costs of hatchery construction and operation are generally well documented and understood." – Comment: There is general agreement with this statement, however the analysis did not seem to take into account the planning costs prior to actual construction. The planning costs are often nearly equal to capital construction costs due to the increased number of planning and permitting documents that are required by policy makers and regulatory agencies. In addition, the economic analysis in evaluating the construction of hatcheries, the "real cost in 2000 dollars," should be further researched. Capital construction cost estimates of older hatcheries when converted to 2000 dollars seems to be far too low. For example, the cost to replace the Irrigon Hatchery in 2000 dollars would be approaching $24,000,000, doubling the analysis estimate of $12,000,000. Replacement of the McCall Hatchery would be closer to $20,000,000, again more than doubling the analysis estimate of $9,000,000. It is recommended that hatchery design engineers review the estimates to ensure closer accuracy.

"We calculated a first indicator of cost effectiveness—the cost of rearing and releasing fish—for all the hatcheries." – Comment: This appears to be straight forward analysis and may be one of the few direct tangibles that can be measured among hatcheries. The costs will still have wide variability depending upon holding times and type of stock raised, however this "in house expense" can be evaluated on a fairly linear scale. The actions undertaken to reduce costs in this expenditure may only be nominal depending on the type of production facility and its capacity.

"The second indicator of cost effectiveness – cost per surviving adult fish—was found as expected, to be highly variable among hatchery programs." – Comment: We concur with this statement because the numbers produced are simply rough estimates of the costs per surviving adult fish. The key words here are "rough estimates." These cost figures are by no means accurate; the report questions its own validity on these estimates on page seven under the "Data Gaps and Needs" section, second bulleted paragraph.

It is a bit surprising that the economic analysis failed to include discussion of the role of the Columbia and Snake River dams. Fall Chinook cost/adult return from 0+ smolt releases are much higher when released above Lower Granite dam. In general, SAR's are directly and inversely proportional to the number of dams the fish must negotiate downstream and upstream.

"Augmentation and mitigation hatcheries, which seek to enhance fish harvests, can be judged by the cost incurred per additional fish harvested." – Comment: There is general agreement with the statement being made, however the enormous disparity in costs per harvested fish just reflects the enormous variability within the system. Again, as for the validity of these figures please refer to the report's own "Data Gaps and Needs" section, page seven, second bulleted paragraph.

"This cost analysis has given us basis for optimism that more extensive cost effectiveness study of specific project proposals for the Council cost will provide useful information." – Comment: Perhaps this may be true, that further evaluation of the production facilities will result in measures that are able to curtail costs. It may be just as prudent to evaluate each hatchery on an individual basis, as opposed to a comparative basis, and recognize a generalized standard that has been observed by hatchery managers for nearly 100 years, that the most cost effective hatcheries are built as close to the ocean as possible.

"To provide a reliable tool for evaluation of hatchery proposals we would need to expand the data base for hatchery costs and production, and we would need some additional analysis of relationships between costs, hatchery purpose, and physical conditions at the hatchery site (water source and location factors)." – Comment: There is agreement with this finding (more in-depth studies into type, size, and location, etc.), however this finding re-introduces the question: Is there a need to further define hatchery objectives in the hopes of being able to gain further resolution into expenditures; or, do you do away with comparative cost analysis between facilities and simply evaluate each hatchery on its own fiscal merit?

The cost analysis does a fair treatment of its own shortcomings. The section "Data Gaps and Needs" basically serves as a catch-all for covering the analysis estimates that have maximal flex and are subject to wide variability.

There are two major recommendations made from the phase-one analysis. The first recommendation of the cost analysis seems to be on track, but somewhat contradictory to the comparative cost analysis that has been completed. The recommendations generally go back to the idea of further investigation into the objectives of each hatchery and how to separate costs related to those objectives, which in certain text builds a stronger argument for evaluating the hatcheries on a non-comparative individual basis. The recommendation does suggest that future collaboration should occur between biological analysts and economists prior to any further endeavors into the economic exploration of costs associated with augmentation, mitigation, restoration, and other ESA related issues.

The second recommendation seeks to extend the project assessment process into cost-benefit analysis, a review and expansion of available information on economic values associated with increased harvests and increased tributary run sizes. This recommendation seems to be inclusive and a requirement as further economic analysis is to be continued.

The phase-one analysis only addressed issues regarding anadromous fish stocks being reared and released. There was no analysis of hatcheries having objectives related to resident fish species. There will, inevitably, be future questions concerning cost effectiveness of resident fish hatcheries as they expand their role in augmentation, supplementation, research, and experimentation linked to habitat restoration projects.

In conclusion, it is understood that there can be difficulty in generating a cost analysis due in part to the fact that many of the individual hatchery objectives are not clearly defined within the report. This is not to say the objectives are at fault, but just to illuminate that the objectives of several of the hatcheries evaluated do not fit neatly into a specific category of augmentation or supplementation, but rather encompass a bit of each. Combine this slight ambiguity with the additional element that each facility has the potential for performing a research role and you can further cloud the issue of tangibility for the costs incurred by the production facility. Thus, the idea of comparative cost analysis between hatcheries with differing roles and objectives starts out on troubled principles. However, the analysis does build a reasonable framework by listing nine issues that may increase the focus upon the objectives of each hatchery and the cost effectiveness of implementing separate facets of the combined objectives.

At this time, we would like to thank the Council for the opportunity to comment on the financial analysis. While addressing as many of the " Data Gaps and Needs" as possible, we believe it is appropriate to continue into the next phase of the analysis.

Sincerely,

Robert J. Austin
Deputy Director for Fish and Wildlife