

United States Government

Department of Energy  
Bonneville Power Administration

# memorandum

DATE: September 20, 2002

REPLY TO  
ATTN OF: KEC-4

SUBJECT: Supplement Analysis for Yakima/Klickitat Fisheries Project, (DOE/EIS-0169-SA-05)

to: David Byrnes  
Project Manager - KEWL-4

**Proposed Action:** Yakima/Klickitat Fisheries Project – Under the Monitoring and Evaluation Program (M&E), the domestication selection research task would be modified to include a hatchery control line, maintained entirely by spawning hatchery-origin fish.

**Project No.:** F3204

**Location:** Cle Elum, Kittitas County, Washington.

**Proposed by:** Bonneville Power Administration (BPA) and Co-Managed by the Yakama Nation (YN) and the Washington Department of Fish and Wildlife (WDFW).

## 1. Introduction

The Bonneville Power Administration is funding ongoing studies, research, and artificial production of several salmonid species in the Yakima and Klickitat river basins. BPA analyzed environmental impacts of research and supplementation projects in the Yakima basin in an Environmental Impact Statement (EIS) completed in 1996 (USDOE/BPA 1996), and in the following Supplement Analyses: DOE/EIS-0169-SA-01, completed in May 1999; DOE/EIS-0169-SA-02, completed in August 1999; DOE/EIS-0169-SA-03, completed in 2000; DOE/EIS-0169-SA-04, completed in November 2000. The purpose of this Supplement Analysis is to determine if a Supplemental EIS is needed to analyze the changes proposed in the Monitoring and Evaluation program (#199506325) of the Yakima Klickitat Fisheries Project (YKFP) as reviewed in the FY 2001 Project Proposals for the Columbia River Gorge and Inter-Mountain Provinces, ISRP 2000-9 (December 1, 2000). Modifications to the M&E program are in support of the experimental acclimation, rearing and incubating activities for spring chinook.

## 2. NEPA Analysis to Date

The Yakima Fisheries Project Final Environmental Impact Statement (YFP EIS) (USDOE/BPA 1996) analyzed impacts of undertaking fishery research and mitigation activities in the Yakima River Basin. The EIS focused on the impacts of construction, operation and maintenance of anadromous fish production facilities in order to conduct research designed to increase knowledge of supplementation techniques. Spring chinook were the priority species analyzed in the EIS. Subsequent Supplement Analyses (SA's) have analyzed the potential impacts of research activities relating to this experimental design program (DOE/EIS-0169-SA-01, SA-02, SA-03, SA-04).

## 3. Description of the Proposed Action

The proposed actions to be analyzed under this SA are changes to the YKFP Monitoring and Evaluation Program (M&E) at the experimental hatchery facilities at the Cle Elum Supplementation Research Facility (CESRF) in support of the Yakima Basin spring chinook populations. As recommended by the Independent Scientific Review Panel (ISRP) in the review of FY 2001 Project proposal for the Columbia River Gorge and Inter-Mountain Provinces, ISRP 2000-9

(December 1, 2000), the YKFP work plan would modify the domestication selection research task to establish and maintain a hatchery control line in the experimental design.

#### 4. Analysis

The project consists of the collection of salmonid broodstock, incubation of eggs and rearing of fry in hatcheries, the acclimation and release of smolts, and related ecological studies in the study of natural production. The project is adaptively managed to allow appropriate refinements to the supplementation program and the associated monitoring and evaluation program. A revised design for monitoring domestication selection in the spring Chinook supplementation program at the Cle Elum Supplementation Research Facility (CESRF) is proposed for the YKFP that includes a hatchery-only control line. In contrast to the existing program (hereafter called the supplementation [S] line), the H line will be maintained by spawning only hatchery-origin fish and will not be allowed to spawn in the natural environment. There is consensus among project managers on the value and importance of pursuing the hatchery control line measures as soon as practicable, and therefore, the control line development and implementation proposes to collect returning hatchery adults this year to establish this line.

The hatchery control line is a key element in evaluating how well the YKFP spring chinook supplementation project will retard domestication selection. The essential difference between supplementation as it is applied in the YKFP and traditional hatchery culture is that in supplementation there is an opportunity for domestication to be reduced by natural selection in the wild. This is accomplished by taking only natural-origin fish for use as broodstock and having hatchery returnees spawn in the wild. The differences in performance between fish reared under the supplementation regime and those reared under a regime of continuous hatchery culture will be a measure of this domestication-counteracting natural “back” selection.

The H line would be started from 2002 hatchery returnees, randomly chosen from fish intercepted at the Roza adult trapping facility. A minimum of 30 pairs would be chosen to produce 90,000 smolts. Disease considerations may require that a small percentage more be taken for broodstock so that the smolt goal would be realized after losses to disease. Thirty pairs of fish per year should allow a genetically effective population size ( $N_e$ ) in the H line of at least 100 per generation. The H line fish would be reared and released exactly as would their supplementation (S) counterparts in the CESRF incubators, raceways, and associated acclimation at the acclimation facilities. No H line fish would be allowed to spawn in the wild; any returnees in excess of broodstock needs would be removed at the adult collection facility at Roza Dam.

H and S line fish would be compared for a large number of adult and juvenile traits each year. All traits to be examined would be fitness-related quantitative traits. In most cases, performance of H line fish would be compared to that of hatchery-origin fish from the supplementation line (SH). For comparisons of reproductive traits, 30 pairs of SH fish would be brought into the hatchery to be spawned for gamete and fertility comparisons or used in the experimental spawning channel for behavioral comparisons. Comparisons of juvenile growth and morphology in the hatchery environment would be made in the raceways. Juvenile behavioral comparisons would be made in test arenas at the hatchery.

The original YKFP EIS addressed the outplanting of up to 810,000 smolts under the spring chinook program. The addition of 90,000 smolts is an approximate 11% increase in smolt releases in the Yakima basin for a period of approximately four months (March - June). This incremental increase is expected to have negligible effects on the environment. Ecological interactions between hatchery and resident salmonids are described in the YKFP EIS (Chapter 4, pp 128+). Ecological impacts from the first three years of releases have been negligible. This finding has been supported by intense

monitoring. However, approximately 20% of SH fish have precocially matured at age 1+ and many have residualized. The occurrence of large numbers of precocially mature salmon could have ecological and genetic impacts (precocial salmon from the H line could mate with fish spawning in the natural environment or impact target or non-target species through ecological mechanisms), but monitoring indicates that ecological impacts are currently not being detected. There will be no impact from returning adult H-line fish because, as previously mentioned, they will all be removed at Roza.

Table 1: Impacts From Revised Design for Monitoring Domestication Selection

<b>Activity</b>	<b>Impacts-Spring Chinook</b>	<b>Impacts-Other Fish Species</b>	<b>Impacts-Habitat</b>	<b>Impacts-Water Quality</b>	<b>Impacts- Genetic &amp; Ecological Interaction</b>
Acclimation and volitional H line smolt releases from the YKFP acclimation sites (no CESRF releases). Interception at Roza upon return to screen out H line.	Increased take (of hatchery returnees only) to accommodate maintenance of H line. Thirty pairs is target, but because of disease concerns, a small percentage more may have to be taken.	Covered in EIS. Not a significant risk to resident fish for resource competition. May provide an increased prey base for non-target taxa and species of concern. Predation on listed smolts is unlikely because the Yakima SC smolts would lack sufficient size to prey on smolts of listed salmon species.	Increase of 90K fish in the system. Competition for food, space, & habitat negligible. Migration corridor for smolts-qualitative risk-not quantifiable	Increase of 90K fish in the stream.	The first 3 years of releases have had negligible ecological impacts. Some residualism has occurred by precocials. Large numbers of precocially mature salmon could potentially have ecological and genetic impacts; however, monitoring data indicate that ecological impacts are currently not being detected.  No impacts are expected from returning adult H-line fish as all fish are to be removed at Roza.  Because the H-line smolt releases would be at the same time as other smolts-no additional effects beyond those discussed in EIS are expected.
Disposal of surplus H line fish.	Used for food consumption by Yakama Nation	None	None	None	None

There would be no land disturbance activities that could affect cultural resources. Additional effects to species listed under the Endangered Species Act from the additional hatchery fish in the system would be negligible. National Oceanic & Atmospheric Administration Fisheries has been notified of this addition to the program and will add this element to the programmatic biological opinion they are preparing on Mid-Columbia Hatchery Programs. There would be no effect to species covered by USFWS beyond those already addressed in the existing consultation.

## 5. Findings

As documented in this Supplement Analysis, the potential impacts from a revised design for monitoring domestication selection in the spring Chinook supplementation program at the Cle Elum Supplementation Research Facility are not substantially different from those discussed in the Yakima Fisheries Project EIS (DOE/EIS-0169), ROD, Supplement Analyses (SA-01, SA-02, SA-03 and SA-04), and related biological assessments and biological opinions. No additional impacts would occur in connection with these activities. There are no new circumstances or information relevant to environmental concerns and bearing on the proposed actions or their impacts. Therefore, a supplement to the YFP EIS is not needed.

/s/ Nancy H. Weintraub for \_\_\_\_\_  
 Patricia R. Smith  
 Environmental Project Manager - KEC

CONCUR: /s/ Thomas C. McKinney \_\_\_\_\_ DATE: 9/30/2002 \_\_\_\_\_  
 Thomas C. McKinney  
 NEPA Compliance Officer

### Documentation on file:

- Bonneville Power Administration, Yakama Indian Nation, Washington Department of Fish and Wildlife (BPA, YIN, WDFW). 1999a. Biological Assessment on Bull Trout for the Yakima/Klickitat Fisheries Project 1999-2004. March 1999.
- BPA, YIN, WDFW. 1999b. Biological Assessment on Mid-Columbia River Steelhead for the Yakima/Klickitat Fisheries Project 1999-2004. April 1999.
- National Marine Fisheries Service. 1999. Biological Opinion on Artificial Propagation in the Columbia River Basin. National Marine Fisheries Service, Northwest Region, Portland, OR.
- United States Department of Energy, Bonneville Power Administration (USDOE/BPA). 1996. Yakima Fisheries Project Final Environmental Impact Statement. DOE/EIS-0169. Portland, OR
- USDOE/BPA. 1999. Supplement Analysis for Yakima Fisheries Project, DOE/EIS-0169-SA-01. Portland, OR
- USDOE/BPA. 1999. Supplement Analysis for Yakima Fisheries Project, DOE/EIS-0169-SA-02. Portland, OR
- USDOE/BPA. 2000. Supplement Analysis for Yakima Fisheries Project, DOE/EIS-0169-SA-03. Portland, OR
- USDOE/BPA. 2000. Supplement Analysis for Yakima Fisheries Project, DOE/EIS-0169-SA-04. Portland, OR

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Official File - KEC (EQ-14)

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