The Lower Snake River Juvenile Salmon Migration Feasibility Report/ Environmental Impact Statement

Existing Systems Engineering

Information on existing systems engineering

The U.S. Army Corps of Engineers (Corps) continues to study ways to improve juvenile salmon passage through the hydropower system on the Snake River. As part of this effort the Corps released the Draft Lower Snake River Juvenile Salmon Migration Feasibility Report/Environmental Impact Statement (FR/EIS) in December 1999. These information sheets discuss specific topics covered in the FR/EIS. The entire FR/EIS can be found on line at http://www.nww.usace.army.mil. For more information contact Dave Dankel, Walla Walla District Corps, at (509) 527-7288, dave.a.dankel@nww01.usace.army.mil.

The FR/EIS compares the effectiveness of four courses of action: maintaining the existing system with planned improvements, maximizing the transport of juvenile salmon, making major system improvements to fish bypass facilities, and breaching the dams. This Information Sheet provides a summary of the current operation of the four lower Snake River dams.

Introduction

Every FR/EIS has a starting point from which all other alternatives are measured. The Existing Conditions Alternative is the baseline or no action alternative under which the Corps would continue operating the four lower Snake River dams according to their current configuration, including all fish passage programs now in operation. This alternative does not mean that no further improvements would be made. The Corps, as part of its ongoing development plans and in response to changes in agency requirements, plans to improve technology at the dams to promote fish passage. The Corp's current plan calls for turbine improvements, structural modifications to fish facilities at Lower Granite Dam, new fish barges, adult fish attraction modifications, a new trash boom at Little Goose Dam, modifications to fish separators, added cylindrical dewatering screens, and more or improved spillway flow deflectors.

Technical Appendix E—Existing Systems Engineering describes in detail the engineering requirements and costs for maintaining and improving the existing juvenile fish migration facilities along the lower Snake River while continuing the current lock and dam operations.

Existing System

Currently, many fish swim down to great depths towards the turbine intakes. By using submerged screens, these fish are diverted away from the turbines into a channel inside the dam. From there, the fish swim to the juvenile fish facility where they are collected for downstream transportation via trucks or barges. 99% of these transported fish survive to the point of release below Bonneville Dam. Most of the remaining juvenile fish are passed over the spillway with ~98 % survival. Others pass by the turbine intake screens and through the turbines where their survival is only 90-95% for each dam.

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Modifications to upgrade the existing system include:

- Improving the efficiency and effectiveness of the existing juvenile fish bypass and collection facilities
- Adding barges for fish transportation
- Performing a major rehabilitation of the powerhouse, including turbine modifications and improvements that would reduce fish mortality. Turbine improvements would be part of a major upgrade of the powerhouses and would be accomplished over a period of 41 years. Each dam's upgrade would have a different start date.
- Modifying spillways to reduce dissolved gas levels that are damaging to fish.

Fish Passage Strategy: Both Transportation and In-River Passage

Currently, the Corps, in cooperation with the National Marine Fisheries Service, manages fish passage to spread the risk. The current operational procedure for the lower Snake River calls for transporting about half of the fish and bypassing the other half over the spillway.

Summary

The summary table below shows the costs for operating and upgrading the existing fish bypass and transportation system. The summary table includes costs, implementation durations, and the approximate percentage of fish surviving from just upstream of Lower Granite Dam to just downstream of Bonneville Dam. **The information contained in the table is preliminary and subject to change.**

PRELIMINARY SUMMARY TABLE

Existing System Improvements: Cost, Implementation Schedule, and Fish Survival Through the System

Strategy Description	New Construction Costs ($Million)	Construction Implementation Schedule Duration (Years)	AFEP Annual costs for 27 years ($Million) [1/]	Routine Operation & Maintenance ($Million)	Major Rehabilitation of Turbines ($Million) [2/]	Annual Costs for Flow Augmentation ($Million)	Juvenile Fish Survival Through the System [3/]
Both Transportation and In-River Passage (current operation)	$89.3	5	$5.3	$30.7	$193.6	$2.3	83%

[1/] The Anadromous Fish Evaluation Program (AFEP) involves biological evaluations of anadromous fish and evaluations of proposed dam modifications to predict resulting impacts to fish. This program would continue into the future.

[2/] It is assumed the turbine rehabilitation would be implemented over 41 years.

[3/] Based upon a system survival model developed by the Corps using the most recent data from the National Marine Fisheries Service.

Summary of Some of the Actions and Effects of Existing Conditions (Alternative 1)

Action

- No reservoir drawdowns
- No major changes to fish passage systems

Effects

- Slight reduction in extinction risks for listed stocks (CRI)
- Continued hydropower generation
- Continued navigational activity
- Continued irrigation and water supply
- No major change in economic conditions