

SCOPING PROJECT: IMPROVING EFFICIENCY OF PRIMARY LOUVER CLEANING PROCEDURE

Investigators

Connie Svoboda

Hydraulic Engineer

Hydraulic Investigations and Laboratory Services

Bureau of Reclamation

Denver, CO 80225

csvoboda@usbr.gov

Summary

Reclamation's Tracy Fish Collection Facility (TFCF), located in the southern Sacramento-San Joaquin Delta (Delta) was designed to divert juvenile Chinook salmon (*Oncorhynchus tshawytscha*) and striped bass (*Morone saxatilis*) from Delta Mendota Canal flows, thereby preventing entrainment loss to the downstream Jones Pumping Plant (JPP, Bates *et al.* 1960). The TFCF uses a louver-bypass system to intercept and guide fish from entrainment in the Delta Mendota Canal into collection tanks, where they are held until they are truck-transported back to the Delta and away from the immediate influence of the JPP.

Primary louvers are pulled out of the water one at a time in order to clean debris from the louvers. Cleaning typically occurs 1 or 2 times per day for a duration of about 1-2 hours per cycle. Louvers are manually cleaned with a high pressure jet and debris that falls from the louvers is transported down the canal. While the louvers are pulled, fish can move freely through the primary louvers into the Delta Mendota Canal where they are considered entrained. In the secondary channel, the channel is dewatered to clean the louvers with a high pressure jet. While the secondary is dewatered, no water flows through the bypass pipes between the primary and secondary channels. Since fish cannot enter the secondary channel, they cannot be salvaged.

According to the Reasonable and Prudent Alternatives in the 2009 Biological Opinion, Reclamation shall determine "one or more solutions to the loss of Chinook salmon and green sturgeon associated with the cleaning and maintenance of the primary louver and secondary louver systems at the TFCF" (National Marine Fisheries Service, 2009).

In spring 2014, the secondary louvers will be replaced by Hydrolox traveling screens. These screens will provide fish protection by guiding fish into the holding tanks while catching debris on pegs and transporting debris to a collection system at the work surface. The secondary channel will no longer need to be dewatered in order to clean debris from the screens. Investigations on replacement

of the primary louver system with a similar system are ongoing. It may take several years of engineering investigations, design, budgeting, and construction before full replacement of the primary louver system is possible.

In the interim, it may be possible to improve the efficiency of the current primary louver cleaning procedure with a change in operation, equipment, or both. Reducing the overall cleaning time for the primary louvers may be possible by changing protocol or updating equipment. A low-cost version of a vacuum system or airburst system may be able to be added to reduce overall cleaning time. If total cleaning time cannot be reduced, primary louver cleaning could be conducted at times when species of concern are least likely to enter the system. This may involve cleaning at a specific time of day or part of the tidal cycle.

Problem Statement

In order to clean the primary louvers, panels are pulled out of the water and cleared with a high pressure jet. While louvers are out of the water, fish can become entrained in the Delta Mendota Canal. Investigations to replace the primary louvers are ongoing; however, it may be possible to improve the efficiency of the cleaning process in the meanwhile. This may involve a change in procedure or equipment.

Goals and Hypotheses

The goal of this scoping level proposal is to identify if there are low-cost ways to improve the efficiency of the primary louver cleaning procedure.

Materials and Methods

The current primary louver cleaning process will be thoroughly investigated to see if changing in protocol can improve efficiency. A literature review of TFCF reports and data will be conducted to identify when primary louver cleaning should occur (time of day and tide). Alternatives to the current cleaning system may be viable at the TFCF, including simplified versions of alternatives that have been previously considered for the facility (e.g. vacuum system). If any alternatives are deemed feasible by researchers and TFCF staff, implementation (and design, if needed) can proceed in subsequent years.

Coordination and Collaboration

Information will be needed from TFCF staff during the review of current operations and equipment.

Endangered Species Concerns

None during this scoping level proposal.

Dissemination of Results (Deliverables and Outcomes)

Provide summary report of scoping information by September 30, 2014.

Literature Cited

Bates, D.W., O. Logan, and E.A. Pesonen. 1960. Efficiency evaluation, Tracy Fish Collection Facility, Central Valley Project, California. U.S. Fish and Wildlife Service. Seattle, WA, USA.

National Marine Fisheries Service. 2009. Biological Opinion and Conference Opinion on the Long-Term Operations of the Central Valley Project and State Water Project. National Marine Fisheries Service, Southwest Region. Long Beach, CA.