

Diversion Effects on Fisheries

Summary

November 12, 1998

Issue: There is a need to develop a through-Delta operational strategy which benefits fisheries, water supply and water quality. A technical team has been directed to develop and evaluate the benefits and risks of several operational scenarios. The results of these analyses will be presented at the November 17, 1998 meeting.

Background

Direct and indirect effects of the existing state and federal water projects are thought to be important, perhaps critical, factors in the significant decline of some fish species. Aspects of the current problem include:

- Predation in Clifton Court Forebay and entrainment at the export pumps
- Mortality associated with the need to capture and then transport fish to locations in the Delta away from the pumps
- Adverse flow patterns across the Delta which affect migration and spawning
- Reductions in habitat quality and availability due to changes in flow conditions

CALFED's basic conveyance strategy is to develop a through-Delta conveyance alternative based on the existing configuration with some modifications. Because of the long lead time required to plan, design, permit and construct any major water facility, the existing Delta channels must be used for many years even if a decision to build a dual conveyance is made sometime in the future. This basic strategy focuses on making the through-Delta conveyance achieve CALFED purposes and show an overall improvement for all CALFED resource areas in Stage 1. Therefore, the effort for diversion effects on fisheries has focused on developing through-Delta options which will be evaluated for effects on fisheries, water supply and water quality.

CALFED has formed technical interagency/stakeholder teams to assist in the development and evaluation of through-Delta options.

- DEFT--Diversion Effects on Fish Team was formed in 1998 to evaluate the technical issues related to diversion impacts on fisheries and determine what was best for fishery populations.
- NoName Group -- The NoName Group is a stakeholder forum with agency representatives formed to provide input on State and Federal water project operations. The Group was established in 1994 as part of the CALFED Ops group effort at real-time project management. In 1998, NoName was asked by CALFED to recommend water supply and water quality operational measures that are capable of being implemented in Stage 1. (See Water Supply Measures Attachment.)

- Coordinating Team (DNCT) -- DEFT/NoName Coordinating Team (DNCT) was formed to evaluate the combination of CALFED objectives (fisheries, water supply and water quality) and develop a range of operational scenarios that will move towards meeting the goals of all the CALFED objectives. The Coordinating Team was also asked to evaluate the benefits and impacts of the scenarios.

Fish Entrainment Reduction

DEFT has identified the following five ways to reduce fish entrainment:

- Increase Sacramento River flow to enhance fish migration and hydrodynamic conditions.
- Close the Delta Cross Channel to reduce diversion of fish into Central Delta channels.
- Increase San Joaquin River flow to enhance fish migration and hydrodynamic conditions.
- Operate Head-of-Old-River barrier (gates) to reduce diversion of fish into South Delta channels.
- Reduce Delta export pumping to limit direct and in-direct mortality.

Potential Controls on Delta Exports

The Coordinating Team has identified the following potential tools that could be used to address concerns.

- Increased Capacity of Pumping at Banks
- Establish Joint Point of Diversion and Intertie to share with CVP
- Required Outflow (salinity control and X2)
- Export/Inflow Ratio
- Possible QWEST Limits
- San Luis Storage and Delivery (demands)
- Fish Triggers

Proposed Operational Scenarios

The Coordinating Team has developed three types of operational scenarios. Each type of scenario has initially been evaluated by DEFT to determine its benefits for fish protection. The Coordinating Team has been directed by CALFED to further define the three options for ESA assurances and provide additional evaluation of water supply benefits and impacts. This additional evaluation is expected in late November 1998. Attached are tables which provide a brief description and evaluation of each type of scenario.

Areas of Scientific Uncertainty Identified by DEFT

In evaluating the types of scenarios for fish protection, several areas of scientific uncertainty have emerged. Following is a brief overview of some of the issues.

Population Effects of Exports. The team differs in opinion on the degree of population effects from entrainment and salvage related losses. The team also did not agree on the relative importance of export related effects (direct or in-direct) in reducing these losses on populations. The team does agree on where and at what times water may be diverted as to reduce or minimize adverse environmental effects.

Delta Habitat. The team has differing opinions as to the importance of habitat relative to salvage losses in the declines of Bay-Delta fish, and the relative potential benefits of habitat improvement and salvage reductions in the recovery of these fish species. The team agrees, however, on habitat actions and the priority for implementing them in Stage 1.

Anadromous Fish Migration Cues. The team differs on the factors that guide or cue migrating fish on their movements through the Delta. Some believe net freshwater flow cues are important for downstream migrating juvenile fish such as smolt salmon. Others believe that tides and salinity gradients are potentially more important.