

To : Richard D. Be. and

July 23, 1984

From : Department of Fish and Game - Glenn/Colusa Fish Screen

Subject: Enhancement of bypass flows at the Glenn/Colusa Fish Screen

The lack of bypass flows during 1984 have rendered the Glenn/Colusa Fish Screen totally ineffective. Even during periods of positive bypass flows the ~~is~~ efficiency is around 30% (Decoto, 1974). An alternative to the no flow, low efficiency, might be to modify the bypass system. The 1974 study showed that the original bypass system was about  $\frac{1}{2}$  as efficient as culverts placed in the District's dam. To modify the original system would be extremely costly because it is already incorporated into the existing structure. ~~Extend-~~ the outflow beyond the bottom of the District channel might provide some relief but would still probably save no more than 18% of the fish in the system. Such an extension would, according to Ted Vande Sande, be extremely costly because of the distance and the depth involved.

In the June 27, 1984 letter from Robert Clark to Paul Jensen the Irrigation District suggests potential remedies which might restore bypass flows. Assuming the ~~the~~ D.F.&G. is not interested in spending large sums of money, our interest might be directed toward District plans to enhance flows through dredging. Suggestions by the District included widening/deepening the intake channel and in-river dredging to shift flows to the west. The Dept. goal might be to encourage gaining sufficient extra flows to provide bypass waters double or triple that existing before the current no-flow situation.

One of the negative factors yet to be considered is the fish loss occurring from the bypass discharge to the point where the channel empties into the river. All of the 1974 studies were based upon moving fish to the outflow of either the original bypass system or the culverts in the dam. Fish reaching that point still have approximately  $\frac{2}{3}$  mile of slow moving slough conditions until reaching the river. Because of the low volume/velocities there is every reason to assume that predation might be greater below the bypass than above.

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