FOR PROMPT DELIVERY
12/9/98

Lester Snow, Executive Director
CALFED Bay-Delta Program
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South Delta Barriers

Dear Lester:

Thank you for your phone call on December 8 regarding whether there are means other than the three tidal barriers to protect the South Delta's in-channel water supply. I had discussed this subject also with DWR's Mike Ford earlier that day, and with a No Name conference call group on December 7, and with these and other parties on numerous previous occasions. The purpose of this fax is to summarize my understanding of the issues involved, the interrelations between barriers and other CALFED proposals, and the need to look at these barriers as part of an overall plan to solve fishery, and export and South Delta in-channel water supply and water quality problems.

Background

The operation of CVP and SWP pumps draws down the level and depth of water in the shallow South Delta channels to such a degree that there is sometimes too little water depth to operate agricultural diversion pumps. (There are many dozens of pumps scattered over 75 miles of channel). The drawdown also alters water circulation so that some channel reaches have stagnant zones where water quality can not be controlled, and the salts that come down the San Joaquin River and which are derived from CVP westside service area drainage are not then swept on through the South Delta. Furthermore, the flow in the river from Stockton to the head of Old River is reversed. This contributes to problems of inadequate dissolved oxygen for fish, and also draws fish from the central Delta to the CVP's export pumps via that reverse flow.

In the absence of barriers it is the operation of export pumps during low tides that causes the greatest problem of inadequate water depth. The CVP pumps operate during the low tide, but water is currently not usually taken into Clifton Court during the low tide. If the SWP takes water into Clifton Court during low tides, as is now proposed, the drawdown problem will be greatly increased. However, if the three permanent, operable tidal barriers are installed and can be operated on an as needed basis, the drawdown problem will be resolved. When the tidal barriers are not available on an as needed basis, the export pumping must

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be curtailed to the extent necessary to avoid (not just react) to drawdown below needed water depth.

When the three tidal barriers are operating, they substantially reduce the San Joaquin River's salt load that is drawn to the CVP pumps and reexported down the DMC. This in turn, with some time lag, would reduce the salt load which enters the river via drainage from the portions of the CVP westside service area that drain to the river. The tidal barriers do somewhat increase the salt load that reaches the SWP and Contra Costa pumps. However, over time, they will be receiving a larger percentage of a smaller load and hence not an increase in their exported salt load.

Dredging

It has been suggested that dredging could substitute for tidal barriers. Dredging could solve the water depth problem, but only if massive dredging is provided and maintained and many local pumps are lowered. Dredging would not remove stagnant zones, improve water quality, or prevent the reverse flow south of Stockton, or reduce the salt load in the DMC.

Some dredging of the shallowest spots will increase the tolerable export rate. This is being examined by the Corps, DWR, USBR, and SDWA. A program of maintenance dredging is essential in the long term to remove the ongoing aggradation and maintain the ability of the tidal barriers to solve the problems.

Fishery Effects

In the absence of the barriers (a) we have a DO problem south of Stockton, (b) we draw small central Delta fish by reverse flow in the San Joaquin River to the CVP pumps, (c) we have hot, shallow, stagnant reaches in some South Delta channels, (d) smolts emigrating from the Merced river are abruptly subjected to a rise in selenium concentration, a rise of up to ten fold in salinity, and to low flows particularly for smolts that migrate before or after the 31 day pulse flow (this problem would be further alleviated if SDWA's recirculation proposal is also implemented), (e) there is reduced availability of Stanislaus water for fish habitat when dilution water has to be released to meet the Vernalis salinity standard, and (f) we have San Joaquin River salinities south of Vernalis that may be detrimental for striped bass. The Fish and Wildlife Service has worried about possible adverse effects of the barriers on Delta smelt. If the presence of Delta smelt makes it necessary to curtail exports, the barrier operations can also be curtailed. The barriers will be wide open during rising tides. They can be designed to assure that fish wishing to transit will find the open sections. The barriers stop the reverse flow in the San Joaquin which draws water from the central Delta to the CVP pumps and increases somewhat the flow from the central Delta toward the SWP pumps. This tradeoff is alleged to be directionally adverse for Delta smelt.

However, the net flow toward the pumps is small compared to the tidal flows in the central Delta. There appears to be ample evidence that the smelt often move in directions other than with the net flow under circumstances such as these, and very little evidence has been submitted to show that the net flow actually governs their motion in this case. In any event, it must be considered whether this speculatively (net) adverse effect outweighs the fishery and other benefits provided by the tidal barriers.

Conclusion

I hope these explanations will be helpful in analyzing the net benefits of the three tidal barriers in meeting the overall CALFED goals.

Sincerely,

Alex Hildebrand

cc Mike Ford
Lowell Ploss
John Herrick

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