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Subject: Alternatives and Sac R Salmon runs
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Rick,

I have been struggling with several implications of yesterday's discussions about the effects of the three alternatives on runs of salmon in the Sacramento River. Profoundly different conclusions about the relative merits of the three alternatives seem possible. We need technical input to resolve them.

The first concern relates to flows through Georgiana Slough. After lunch, Francis Chung presented us with some information. I understood him to say that channel enlargement in the Mokelumne system as part of Alternative 2 increased flow through Georgiana Slough, and that Figure 19B illustrated that difference. Figure 19B indicates very large differences. For example, at a 30,000 cfs flow at Sacramento, flow increases from about 5,000 cfs in Alternative 1 to over 10,000 cfs in Alternative 2, suggesting a doubling of the number of salmon diverted through Georgiana Slough. The actual increase would be even greater, since the screened diversion at Hood in Alternative 2 would increase the density of salmon in the river below the Hood intake. The conclusion that seems to indicate is that Alternative 1 is better for salmon in the Sacramento River than Alternative 2, despite the fish screen in Alternative 2.

Further examination of Figure 19B, however, indicates that the above interpretation relative to Georgiana Slough probably is not correct. I reached that conclusion because the cross Delta flow shown in that figure for Alternative 3E is less than that shown for either Alternatives 1 or 2. That does not seem consistent with the above interpretation relative to Georgiana Slough, since the relationship between the Sacramento River and Mokelumne River is the same in Alternatives 2 and 3. I suspect that the flow shown for Alternative 2 is the combined flow through Georgiana Slough and the diversion at Hood. Hence we do not have valid information about flows through Georgiana Slough under the three Alternatives, and it can not be determined from Figure 19B alone. Hence we are missing an important piece of information neededto judge the reltaive merits of alternatives. We need direct information about the flow split at the junction of the Sacramento River and Georgiana Slough.

A second issue concerns the implications of having the Delta Cross Channel closed during salmon migrations in the No Action Alternative and Alternative 1. As Tom Howard pointed out that means that Alternatives 2 and 3 should not be evaluated based on salmon losses relative to losses through the Delta

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Cross Channel. The valid comparison seems to be between protection afforded by closing the Cross Channel and by screening the intake from the Sacramento River. That is a tough comparison, since some losses will inevitably occur at a fish screen, while a closed Delta Cross Channel shouldn't cause any losses at that point.

What seems to be missing, at least on my part, is an understanding of how water is transferred across the Delta with the Cross Channel closed. Presumably, that results in greater Cross Delta flows through some combination of Georgiana, Three Mile and Broad Sloughs, with potential consequences for salmon and other fishes, as well as for water quality in the San Joaquin side of the Delta. That question relates not to just the No Action Alternative and Alternative 1, but also to Alternatives 2 and 3, since both of those may not have enough capacity in the Hood intake to avoid increases in Cross Delta flows below Hood. The fact that Alternatives 2 and 3 include increasing the capacity of pumping from the south Delta to about 15,000 cfs increases the probability of such increases in cross Delta flows. Presumably, the Delta model runs for the CALFED alternatives provide answers to those questions, but I have not seen the results.

If the above discussion makes sense, we need to discuss these questions with the folks running the Delta model for the CALFED alternatives, and that will likely lead to a need to discuss consequences with salmon experts.

Pete