

To: Steve Yeager

From: Pete Chadwick

Subject: Review of Alternatives

This memo provides coordinated comments from Department of Fish and Game staff on the January 23, 1996 draft of alternatives.

The draft of alternatives goes a long way towards providing a good set of alternatives for public review. A lot of work remains, however, before it is ready for public release.

As to the central question of whether it includes an appropriate range of alternatives, we believe the range is sufficient, as long as the program staff has documented the good reasons which exist for excluding bay barriers from a list of 20 or so alternatives.

Another question about the adequacy of the range of alternatives is whether all those on the present list should be included. We believe the program should be considering only alternatives which have a real chance of "fixing the broken Delta" as described by the program's objectives. This requires that each alternative be balanced for the various principal objectives and be sufficient to make substantial progress for each objective. Several of those in the present draft seem to fall short of that test. We think Alternatives 1, 4, 5, 17 and 19 almost certainly fall in this category. Rather than dropping these alternatives, improving them might be the best strategy for maintaining a good range for public review.

We are offering some comments on evaluation of alternatives and actions, but we consider evaluation to be largely a task for later. Do not be surprised when you get a lot of evaluation comments later on items we say nothing about at this time.

Our remaining comments are grouped under the following headings: Structure of Report, General issues, Specific Alternatives, Specific Actions, Core Actions and Solution Principles.

Structure of Report - The matrix figure near the beginning entitled: "Approaches And Emphasis of Each Alternative" is an excellent aid, but it needs to be expanded. It is too much to include each action in one matrix, so we suggest adding more matrices. For example, separate matrices for Ecosystem Quality could include each action for the various levels of habitat restoration. Such matrices could be further improved by indicating magnitudes rather than just having stars. For example, some alternatives include screens for diversions over 100 cfs, while others propose screening for diversions over 250 cfs. This could be indicated by the numbers 100 and 250 instead of stars. The program team can probably think of other such improvements.

The second structural change is that the Actions should be described in a separate section and then listed only by title under each alternative. This should be done for the vast majority of actions. It would not be appropriate for features which are included only in one alternative. These are usually or always the key features for the alternative such as "Construction and Improvement of Conveyance Facilities" in the Chain of Lakes Alternative. Our reason for proposing the separate listing of actions is it takes an enormous amount of time reading the same action item in several alternatives. This is made more difficult by the need to determine whether the same action is identical in the various alternatives. In most cases they are identical. Where they are not, the difference could be noted in the alternative. The most common difference is differences in magnitude, e. g. acres, and that could easily be noted.

General Issues -

.....(you should have these pages)

Alternative 13 - It is not at all clear what physical features are included in the alternative. The map and description indicate diversions from Thermalito. Yet the text talks about diversions from the Sacramento River upstream from the Feather. What physical feature would make that possible.

The description mentions a capacity of 5,000 cfs at the terminus of the East Valley Canal, and also suggests that potentially very large amounts of water would be delivered along the way as a substitute for existing deliveries. What would the capacity be at the Feather River, and what is the envisioned volume of water to be diverted from the Sacramento and Feather rivers? How much would flows in the Sacramento and Feather rivers be reduced? What is the magnitude of increased releases into the San Joaquin tributaries? How would Delta outflow be affected? Why would it be operated only to capture flood and spring flows as implied in the first paragraph? The preliminary assessment of benefits and constraints seems to ignore many items related to the above questions. Furthermore, the assessment seems misleading since no increased yield is indicated while the introductory paragraph indicates increased yield is a primary purpose.

Incidentally, we are very skeptical that the "primary project purpose" of increasing fish will be achieved due to decreased instream flows and other consequences. These are generally described under Alternative 15 as comments to be included in the *Concerns and Constraints* section. Uncertainties about the physical and operational features make it impossible to judge the magnitude of these consequences at this time.

Alternative 14 - We need considerably more information to convince us that a new 2 MAF reservoir is going to produce the environmental benefits claimed. This alternative has a lesser degree of the same concerns described below under the *Constraints and Concerns* section of Alternative 15.

Alternative 15 - This alternative takes to the extreme the concept of moving diversions upstream, thus reducing or eliminating losses of fish in diversions, but reducing instream flows as a trade off. The alternative is described based on the assumption that a net benefit for fish will result. The San Joaquin system demonstrates that is not necessarily true, so we need more specific information to convince us of the value of the proposal. One consideration is the reduced instream flows would make it more difficult to realize the benefits anticipated from the various "habitat restoration" proposals included in the alternative.

The *Constraints and Concerns* section needs to be beefed up to indicate that this alternative may, depending on its eventual scale and operating rules, cause warming in salmon spawning areas due to lower flows resulting in higher heat gain per mile, warm the Sacramento river by release of warm surface waters from off-stream storage reservoirs, reduce assimilative capacity being counted on to avoid adverse effects of Iron Mountain Mine, degrade spawning gravel by reducing flows needed to clean gravel and prevent vegetation encroachment, decreasing flood flows needed to restore riparian habitat, and reducing flows needed by salmon migrants. These same concerns apply to other alternatives based in part on diversions from the dams.

Alternative 18 - The ultimate conclusion stated is that this alternative will produce moderate ecosystem and vulnerability improvements without commensurate water supply benefits. Doesn't this in effect mean that it is not possible to provide moderate water supply benefits without a Delta water transfer facility? Considering the range of water supply measures included in this alternative and public perceptions to the contrary, it is going to take more than one unsupported sentence to get acceptance of the conclusion.

Add that significant entrainment and adverse hydrodynamic impacts of the South Delta export facilities are expected to continue with this alternative.

Alternative 19 - Considerable evaluation is needed to demonstrate how realistic the stated benefits are.

Specific Actions -

Bay Habitat Restoration - What evidence supports the hypothesized benefits for canvasbacks, redheads, and salmon smolts?

Delta Levee Habitat Restoration - This action involves a mixture of diverse actions having diverse consequences. It is not possible to estimate benefits without commitment to specific actions.

Sacramento River Habitat Restoration - Why isn't this always included in the "Physical and Structural Features" section? If it is dependent on a feasibility study, shouldn't all the habitat restoration proposals be subject to feasibility studies?

"Implement a Subsidence Management Program" and "Subsidence Reduction" are two quite different approaches with the same apparent purpose. Is it reasonable to include both in the same alternative?

Subsidence Reduction - This action is variously describe as involving a 50 to 100 yard zone and a 25 to 50 yard zone. Why? Over a number of years would this alternative have the effect of producing a levee either 50 or 100 yards wider than the existing levee with the remainder of the island being substantially lower in elevation? Has this been proven effective? Since subsidence would continue on most of each island, how long would the action be effective?

Channel Improvements and Levee Maintenance - This action must be specific as to which channels are to be enlarged and how much, because enlargement changes flow distribution creating potential fishery impacts which would be site specific. Hence the action can not be evaluated without more specific information.

Modify Clifton Court Forebay Operation - This action describes benefits which are at best speculative. The underlying principle is that once young fish of species which need to get to the lower estuary or the ocean to have good survival get drafted into the south Delta their survival can not really be enhanced by changing rates of entrainment into Clifton Court. The only viable strategy for improving survival, other than changing flows to transport them to where they should be, is salvaging them at the fish screens as quickly as possible.

Improve Pollutant Source Controls - Is this action intended to pertain only to nonpoint sources? It should be specific and