

REFINEMENT OF ALTERNATIVES TO PRODUCE A SHORT LIST

The CALFED Bay-Delta Program is in the process of developing alternative solutions to problems of the Bay-Delta system. Currently, the Program has narrowed the range of solutions to ten refined alternatives which have recently been the focus of attention in a formal Scoping process. At the same time, staff of the Bay-Delta Program have been working with CALFED agencies to evaluate the ten alternatives against solution principles. Both of these processes have suggested a modification in the structure of alternatives. Currently the alternatives vary in the level of effort applied to actions related to ecosystem quality, water quality, system vulnerability, and water use efficiency. It appears that it may be more appropriate to include each of these as an essential component or program that is essentially the same across a range of alternatives. This range of alternatives would thus be defined by variations in components related to Delta conveyance and water storage.

The scoping comments, evaluations, and reasoning that have led to this proposed change in the structure of alternatives are summarized below.

Current Status and Structure of Ten Alternatives

All of the draft alternatives developed by the Program, including the initial set of 20 and the refined set of ten, were structured to include a varying level of effort applied to certain components of the alternatives. Levels of effort characterized as *modest*, *moderate*, or *extensive* were applied to many of the components. This approach was used originally in order to provide a range of solution alternatives, and to offer a very rough level of equity meeting different objectives within each alternative.

At the beginning of the process a different approach was proposed, in which most components of the alternatives remained constant, and the alternatives varied only with respect to the water supply components, in particular Delta conveyance. At the time, this approach was dismissed because it appeared to concentrate solution-finding effort on problems related to water supply while devoting relatively little planning effort to solution of other problems in the Bay-Delta.

The information package for Workshop 6 described 20 components in the four resource areas being addressed by the Program: water supply, water quality, ecosystem quality, and system vulnerability. In most cases, related components are always treated the same way within a single alternative (eg. If component X is moderate, then component Y is also moderate) so we can simplify the structure by forming larger components. Using this approach, the current set of ten alternatives can be described as including components related to ecosystem quality, water quality,

system vulnerability, water use efficiency, Delta conveyance, and water storage. Each alternative also includes the same set of core actions. The first four components vary principally in the level of effort applied. The two components that include distinctly different approaches among the alternatives are Delta conveyance and water storage.

Conclusions from Scoping

During April and early May the program conducted nine scoping meetings around the state, a workshop in Sacramento, and a meeting of the Bay-Delta Advisory Council. The scoping period has been formally extended to May 20. A scoping report is being prepared based on comments received to date, and will be completed after the scoping period concludes.

A number of the comments received during scoping have led us to conclude that several components in the alternatives might be more appropriately treated as programs that must be included in all the alternatives. Some of these comments and our conclusions are:

Water use efficiency must be strongly pursued in all the alternatives. This suggests that water use efficiency measures should be implemented at the same vigorous level among all the alternatives, where previously they included efficiency at modest or moderate levels. Alternative A, Extensive Demand Management, is the one current draft alternative that relies principally on water use efficiency to balance supply and demand. If the Program adopts the approach that water use efficiency is implemented at the same level in each alternative, then this alternative could be differentiated by including more rapid implementation of the efficiency measures.

The best possible source water quality is of paramount importance to urban water suppliers. Agencies that deliver drinking water are very concerned about the cost of meeting future drinking water quality standards, as well as the technical challenges associated with treating source water of degraded quality. This suggests strong pollutant source control measures in every alternative.

Delta levees will be needed to protect agriculture, infrastructure, and habitat no matter how water is conveyed in the Delta. Among the values protected by Delta levees, only water quality varies among alternatives (according to the method of conveyance). Adequate levee integrity is required to protect other values regardless of the method of Delta water conveyance. This argues for a similar level of protection in each alternative.

Ecosystem actions at the modest and perhaps the moderate level appear inadequate; the Program needs a single coherent vision of ecosystem restoration. We have already acknowledged that adaptive management will be vital in guiding our efforts to improve ecosystem quality. It is this adaptive management that will provide the needed flexibility in ecosystem quality improvement. There is really no alternative to a single comprehensive plan for restoring ecosystem health.

In response to comments such as these, some components of the alternatives can be viewed in a different way. Water use efficiency, water quality, system vulnerability, and ecosystem quality could be viewed as *programs* that are present in all the alternatives, and are composed of a series of actions that are implemented incrementally over time.

Alternative Refinement

The next activities for the Program will include additional refinement of alternatives, leading to selection of a short list of alternatives that is large enough to offer a reasonable range of solutions while small enough to allow for detailed analysis in Phase II of the Program.

Additional refinement of the ten alternatives is proceeding according to these steps:

1. Review how each alternative satisfies the Mission Statement and Objectives.
2. Review input from CALFED, BDAC, scoping meetings, workshops, stakeholders, and the public on each alternative.
3. Evaluate and document how well each alternative satisfies each Solution Principle.
4. Determine potential ways to modify each alternative to improve any low solution Principle ratings.
5. Verify that the alternative, if revised, would still meet the Objectives and the other Solution Principles.
6. Review the alternatives and potential modifications to identify improved alternatives.
7. Merge similar improved alternatives into a single alternative.

Preliminary Conclusions from Evaluation Against Solution Principles

At the last Extended PCT meeting on April 10 the process of evaluating alternatives against solution principles was introduced and CALFED agency staff were invited to participate in this rather time-consuming evaluation. A few CALFED staffers contributed to this evaluation, and we have started to brief agencies on the outcome of this evaluation.

Objective and uniform application of the solution principles proved to be difficult. It was often necessary to make a number of assumptions in order to apply a solution principle, and care had to be taken to use the same assumptions throughout the evaluation of an alternative or throughout the range of alternatives. Some of the questions that needed to be answered in order to apply the solution principles include: What is the magnitude of permitting difficulty to implement the

alternative? Will changes in water rights be needed? How well can we mitigate for environmental impacts associated with various alternatives? How will any new yield be apportioned between the environment and other water uses? Agency staff members have commented on the challenge of carrying out this evaluation, considering the large number of assumptions needed. The initial evaluation should be considered preliminary.

Aside from the difficulty of applying the solution principles, the process proved to be instructive. As the detailed solution principles were applied to the ten alternatives, and modifications were devised to improve low solution principle ratings, a pattern emerged. Several components became more similar across the range of alternatives. Some of the potential improvements that could be applied to several of the alternatives were these:

- Reduce the magnitude of land retirement to reduce indirect impacts (eliminate redirected impacts) and provide more equity; develop alternative approaches to achieve agricultural conservation;
- Add more habitat (on the order of Alternative F with upper Sacramento River meander belts) to provide higher conflict resolution and durability; as the magnitude of ecosystem restoration increases, it will be necessary to rely more heavily on adaptive management to guide actions beyond the initial stages of the restoration program;
- Add additional fish screening to reduce conflict and provide higher durability;
- Increase water quality actions to provide higher conflict resolution;
- Increase levee maintenance to provide higher conflict resolution and provide more durability;
- Add subsidence control program to provide higher conflict resolution, higher durability, higher implementability and eliminate redirected impacts;
- Increase emergency response to provide higher conflict resolution, higher durability, higher equity, more implementability, and to eliminate redirected impacts.

Application of solution principles and modification of alternatives to better meet the principles tends to make the draft alternatives more similar to one another. This is particularly true for components of the alternatives related to water use efficiency, water quality, system vulnerability, and ecosystem quality. This process can be portrayed graphically as follows:

Base Alternatives → Solution Principles Applied → Resulting Essential Component		
A	Equity No Significant Redirected Impacts	Water Use Efficiency
F	Reduce Conflict Durability Equity	Ecosystem Restoration (Including habitat, flow, and diversion modification elements)
B (Water Quality Element)	Reduce Conflict Durability Equity	Water Quality
H, I, J (System Vulnerability Element)	Reduce Conflict Durability Equity Implementability No Significant Redirected Impacts	System Integrity (Including levee maintenance, emergency response, subsidence management, levee stability)

Implications for Program Direction and Alternative Structure

As a result of scoping and our evaluation of alternatives against solution principles, we may view the alternatives on the short list as composed of two parts. Each alternative might contain certain uniform components related to water use efficiency, water quality, system vulnerability, and ecosystem quality. These components are really programs that would consist of actions or projects implemented over time. In addition, each alternative might include some form of component related to Delta water conveyance and water storage. As a result, the short list may not be a list of discrete alternatives, but rather a matrix of the variable components combined with a set of relatively uniform essential components.

This possible approach will be the main topic of discussion at the next Extended Program Coordination Team meeting.