

Refined
- Alternatives

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DEVELOPMENT AND REFINEMENT OF ALTERNATIVES

ACTIONS FOR RESOLVING BAY-DELTA PROBLEMS

Fifty categories of potential actions to resolve Bay-Delta problems and achieve Program objectives were identified by reviewing existing literature and soliciting input from PCT and BDAC members, stakeholders, and the general public. Within these categories, hundreds of individual actions were defined.

From this list, "core actions" were identified -- actions that Program participants felt should be included as part of all program alternatives to the degree possible. Core actions generally enjoy broad support among stakeholders; provide a benefit to the entire Bay-Delta system; are cost effective; meet one or more Program objective(s); and provide some progress toward a solution but do not represent a satisfactory solution by themselves.

Moreover, core actions do not preclude or conflict with other actions; do not increase conflicts between beneficial uses or stakeholders; do not represent a major program activity or major facility structure; and do not create significant adverse, site-specific impacts or redistribute costs.

Establishing an appropriate geographic scope within which to identify Bay-Delta problems and develop solution alternatives was an important aspect of this action identification process. To address this concern, separate problem and solution scopes were defined.

- **Problem Scope:** The Program addresses problems that exist within the legally defined Delta (i.e., Suisun Bay, to Carquinez Strait, and Suisun Marsh) or are closely linked to this area. Examples would include toxic inflows and outflows, in-migrating fish, and water diversion patterns.
- **Solution Scope:** Because the Bay-Delta solution is part of a larger water and biological resource system, a much broader solution scope has been defined -- one including at least the Central Valley watershed, the Southern California water system service area, and the portions of the Pacific Ocean out to the Farallone Islands. This is necessary because many problems related to the Bay-Delta are caused by factors outside the Bay-Delta. For example, salmon population are linked to the Bay-Delta

due to high mortality rates during salmon migrations. While one solution would be to reduce mortality during salmon migration through the Bay-Delta, it might be less expensive or ecologically preferable to promote greater salmon production upstream. An expanded solution scope is also desirable from a planning perspective because more benefits may be generated at lower cost if solutions are not limited to the geographic Bay-Delta.

ALTERNATIVE IDENTIFICATION

Action categories represent the building blocks of solution alternatives -- that is, each solution alternative is a combination of action categories reflecting differing approaches to achieving program objectives and addressing solution principles.

Given the large number of these categories, and the range of perspectives on solutions to Bay-Delta problems among stakeholders and CALFED agencies, thousands of potential alternatives could have been identified. In response to this, a first step for the Program was to devise a methodology that would keep the number of alternatives to a manageable level while still representing the full range of approaches to resolving the problems.

The methodology chosen to accomplish this was to define the critical conflicts that exist between beneficial uses and resources in the Bay Delta, and then to define approaches to resolving these conflicts. The conflicts were:

- **Fisheries versus Diversions:** The conflict between fisheries and diversions results primarily from fish mortality attributable to water diversions. This includes direct loss at pumps, reduced survival when young fish are drawn out of river channels into the Delta, and reduced spawning success of adults when migratory cues are altered. The effects of diversions on species of special concern have resulted in regulations that restrict quantities and timing of diversions.
- **Habitat versus Land Use and Flood Protection:** Habitat to support various life stages of aquatic and terrestrial biota in the Bay-Delta has been lost due to the development of land and the construction of flood control facilities to protect developed land. The need for habitat affects land development planning as well as levee maintenance and planning. Efforts to restore the balance often require that land used for agricultural production be dedicated to habitat.
- **Water Supply Availability versus Beneficial Uses:** As water use and competition for water have increased during the past several decades, conflict too has increased among users. A major part of this conflict is between the volume of instream water needs and out-of-stream water needs, and the timing of those needs within the hydrologic cycle.

- **Water Quality versus Land Use:** Water quality can be negatively impacted by land use, and ecosystem water quality needs are not always compatible with urban and agricultural water quality needs.

In assessing these conflicts, alternate approaches to conflict resolution, and alternative levels of resolution, were defined. Approaches for resolving the fisheries and diversions conflict included (1) a fish productivity approach and (2) a diversion modification approach. Approaches for resolving the habitat and land use/flood protection conflict included (1) an existing land-use pattern approach and (2) a modified land-use pattern approach.

Approaches for resolving the water supply availability and beneficial uses conflict included (1) a demand reduction approach and (2) a supply enhancement approach. Approaches for resolving the water quality and land-use conflict included (1) managing the quality of Delta inflows and (2) managing instream water quality after discharges had occurred.

Within each of these approaches, levels of conflict resolution ranging from less intensive to more intensive were identified.

This process produced 32 approaches to resolving the four conflicts. At this point, four teams of consultants representing a variety of technical disciplines were formed -- one for each conflict area. These teams were then assigned an equal number of the 32 approaches (i.e., eight apiece), and directed to develop three preliminary solution alternatives -- sets of actions and action categories -- for each of the eight approaches.

This procedure identified 96 preliminary solution alternatives (24 by each team) which have subsequently served as the foundation for the refinement process that will ultimately define the short list of three to five alternatives to go into Phase II analysis. In the Program's judgment, these 96 were representative of the larger number of possible combinations and sufficed to bracket the range of possible solutions to the four conflicts and, therefore, to the key problems facing the Bay-Delta.

ALTERNATIVE REFINEMENT

The 96 preliminary alternatives were very broad by design. Moreover, because they were crafted by teams representing the four conflict areas, they tended to address the four conflicts in varying degrees -- that is, they were not balanced in addressing program objectives, and solution principles.

In response, the teams were instructed to begin balancing their alternatives, and to refine the initial 24 per area to approximately 10 per area by combining those with similar characteristics. This produced a refined list of approximately 40 alternatives.

At this point in the process, leadership responsibility for the four teams was moved from the technical consultants to Program staff. This change was made to take advantage of staff's specific expertise on Bay-Delta issues, and to more systematically include PCT members in the process so as to ensure maximum sensitivity to the policies and positions of their agencies and stakeholder groups.

Continued consolidation and balancing of the alternatives brought the number to 20, and these 20 were subsequently presented to stakeholders, BDAC members, and the public at workshop 5. Consolidation and refinement based on input from that workshop produced the 10 alternatives described in this report.

This process will continue in coming weeks to refine these 10 alternatives to the three to five most promising for Phase II evaluation. During this process, the relative characteristics of the alternatives will be assessed and displayed in terms of their attainment of Program objectives, cost performance, and satisfaction of solution principles. These displays will then be presented at workshops, scoping meetings, and in discussions with the BDAC and PCT to solicit guidance and build support in crafting the preferred alternative.

In addition, the Program will at this point begin identifying strategies to stage or sequence implementation of the alternatives over time. Staging facilitates benefit assessment and financing, and allows for "adaptive management" (i.e., the capability to adjust strategies and schedules based on benefits assessments, public input, and financing considerations) in guiding future implementation.