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Developing a Draft Preferred Program Alternative

Section 1 - Framework

Introduction

This draft paper provides an overview of how staged implementation, predefined conditions and linkages for future staged decision-making, and the adaptive management concept can be used to develop a draft preferred program alternative. It is currently the primary discussion tool for developing a draft preferred alternative but will ultimately be incorporated in a broader long-term implementation plan for the preferred program alternative including the six common program elements, storage and conveyance program elements, financing, monitoring, and an assurances package. **Many items contained in this paper require stakeholder and agency input to make them more specific and meaningful.** Information from this paper will likely be incorporated into a *Revised Phase II Report* (description of CALFED Phase II evaluations) which will accompany the Draft Programmatic EIS/EIR.

From agency and stakeholder comments, three time periods are evident between now and completion of the Program in several decades:

- Between now and the Record of Decision and Certification of the Programmatic EIS/EIR [decisions required during this period will be covered under existing authorities; see Attachment A for example]
- Stage 1 of Program implementation extending seven years from the final decisions on the Programmatic EIS/EIR [primary focus of this report]
- Long-term implementation following Stage 1 [contained in the long-term implementation plan under development]

The paper is organized in three sections. Section 1 provides the general framework for the CALFED staged implementation and staged decision making. Section 2 provides an outline of the expected status of the Program development at the time of the Record of Decision and Certification of the Programmatic EIS/EIR. Section 3 provides a list of Stage 1 actions for the first seven years of Program implementation.

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Background

At the confluence of California's two largest rivers, the Sacramento and San Joaquin, the San Francisco Bay and adjoining Sacramento-San Joaquin Delta (Bay-Delta) together form the largest estuary in the western United States. The Bay-Delta is a haven for plants and wildlife, supporting over 750 plant and animal species. The Bay-Delta supplies drinking water for two-thirds of California's citizens and irrigation water for over 7 million acres of the most highly productive agricultural land in the world.

There is a rich history of conflict over resource management in the Bay-Delta system. For decades the region has been the focus of competing interests--economic and ecological, urban and agricultural. These conflicting demands have resulted in several resource threats to the Bay-Delta: the decline of wildlife habitat; the threat of extinction of several native plant and animal species; the collapse of one of the richest commercial fisheries in the nation; the degradation of the Delta as a reliable source of high-quality water; and a Delta levee system faced with an unacceptably high risk of failure.

CALFED is exploring three basic alternatives (approaches) to solving the problems in the Bay-Delta system. The preferred program alternative will likely be a hybrid of features from these three. Each alternative includes eight integrated program elements (water quality, water use efficiency, ecosystem restoration, levee system integrity, water transfer framework, watershed program, storage and Delta conveyance) and related assurances, financing, and monitoring. These program elements are being revised based on agency and stakeholder input. The preferred program alternative will be a comprehensive package of these eight program elements that, together, must reduce conflicts in the Bay-Delta system. These elements will move forward together to solve problems in four areas of the Bay-Delta system:

> **Ecosystem Quality** - The Bay-Delta system no longer provides a broad diversity of habitats nor the habitat quality necessary to maintain ecological functions and support healthy populations and communities of plants and animals. Declining fish populations and endangered species designations have generated major conflicts among beneficial uses of water in the Bay-Delta system. The health of the Bay-Delta ecosystem has declined in response to a loss of habitat to support various life stages of aquatic and terrestrial biota and a reduction in habitat quality due to several factors including diversion of water, toxics, exotic species, etc.
>
> The primary ecosystem quality objective of the Program is to "improve and increase aquatic and terrestrial habitats and improve ecological functions in the Bay-Delta to support sustainable populations of diverse and valuable plant and animal species." The strategy to achieve this objective is to begin recovery of ecosystem health by reducing or eliminating factors that degrade habitat, impair ecological functions, or reduce the population size or health of species.

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The ecosystem restoration program (ERP) is the largest, most comprehensive, and most inclusive environmental restoration program in the United States. It provides a new perspective to restoration science by focusing on the rehabilitation, protection, or restoration of ecological processes which create and maintain habitats needed by fish, wildlife, and plant species dependent on the Delta and its tributary streams. The program is supported by an implementation strategy that emphasizes solid science, adaptive management, and local participation: an innovative approach that is becoming a model for similar efforts throughout the nation.

Water Supply Reliability - As water diversions and competition among uses have increased during the past several decades, conflicts have increased among users of Delta water. Heightened competition and conflict during certain seasons or during water-short years has magnified the impact from natural fluctuations in the hydrologic cycle. In response to declining fish and wildlife populations, water flow and timing requirements have been established for certain fish and wildlife species with critical life stages dependent on freshwater flows. These requirements have reduced flexibility to meet the quantity and timing of water exports from the Delta. There are concerns that additional restrictions that might be needed to protect species could increase the uncertainty of Delta water supplies. This basic disparity between water needs and water availability has created economic uncertainty in the water service areas and increased potential conflict over supplies.

The primary water supply reliability objective of the Program is to "reduce the mismatch between Bay-Delta water supplies and current and projected beneficial uses dependent on the Bay-Delta system." The Program has a three-part strategy to reduce conflict and meet water supply reliability objectives. This strategy seeks to: reduce the mismatch between supply and beneficial uses through a variety of actions including demand-side management; reduce the impacts of water diversions on the Bay-Delta system; and increase the flexibility to store and transport water.

Water Quality - The Delta is a source of drinking water for millions of Californians and is critical to the state's agricultural sector. In addition, good water quality is required to maintain the high quality habitat needed in the Bay-Delta system to support a diversity of fish and wildlife populations. Yet, despite improvements in Bay-Delta water quality, the issue remains a primary concern in the Delta.

The primary water quality objective of the Program is to "provide good water quality for all beneficial uses." Good water quality means different things to different users, and there are different ways to achieve the objective. For example, organic carbon that is naturally present in Delta water can contribute to carcinogenic treatment byproducts in drinking water, but this carbon supports primary productivity and ecological function of the Bay-Delta system. The Program's strategy to achieve the water quality objective

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includes reducing or eliminating parameters that degrade water quality at its source. Many of the Program's water quality sub-objectives concentrate on this direct source control approach.

Levee System Integrity - Settlers first constructed levees in the Sacramento-San Joaquin Delta during the late 1800s. Initially settlers built levees to turn tidal marshes into agricultural land and over time increased the levee heights to maintain protection as both natural settling of levees and shallow subsidence of Delta island soils (oxidation lowers the level of land over time) occurred. The increased levee heights combined with poor levee construction, and inadequate levee maintenance makes Delta levees vulnerable to failure, especially during earthquakes or floods. Delta island farmland, wildlife habitat, and critical infrastructure can be flooded as a result of a levee failure. Levee failure on specific Delta islands can have direct or indirect impacts on water supply distribution systems. Direct impacts result from flooding of distribution systems such as the Mokelumne Aqueduct, and indirect impacts result from salty water moving up into the Delta, as an island is flooded. The increased salinity in the Delta would be of particular concern in a low water year, when less freshwater would be available to drive back the incoming salt water. Long-term flooding of specific Delta islands can have an effect on water quality by changing the rate and area of the mixing zone. A long interruption of water supply for in-Delta and export use by both urban and agricultural users could result, until the salt water could be flushed from the Delta.

The primary levee system vulnerability objective of the Program is to "reduce the risk to land use and associated economic activities, water supply, infrastructure, and the ecosystem from catastrophic breaching of Delta levees." Failure of Delta levees can result either from catastrophic events, such as earthquakes and floods, or from gradual deterioration. Subsidence of the Delta island peat soils and settling of levee foundations places additional pressure on levees and increases the risk of failure. The Program's strategy for achieving the system integrity objectives is to implement a comprehensive plan to address long-term levee maintenance, stabilization, and emergency levee management while providing opportunities to enhance ecosystem values.

Significantly, there are many linkages among the objectives in these four areas and among the actions that might be taken to achieve these objectives. Most actions that are taken to meet program objectives and solution principles, if carefully developed and implemented, will make simultaneous improvements in two or more resource areas.

The unprecedented scope of the Program cannot be overstated. The vast geographic extent of the area under consideration, the variety and complexity of the hydrological and ecological process involved, the history of conflict among the affected interests, and the magnitude of the potential economic consequences for California's commercial, agricultural, and industrial base all combine to make this effort the most ambitious of its kind anywhere in the world. In the United States, only the well-known efforts at addressing environmental and institutional problems in the

Chesapeake Bay and in the Florida Everglades can serve as comparisons.

Considering the complexity and large number of items to be completed as part of the CALFED Program, implementation will be conducted in several stages over 30 or more years. The first stage (7 years following final decisions on the programmatic EIS/EIR) will consist of actions which begin to make progress towards meeting CALFED goals to simultaneously solve problems in the four areas. Many of the actions included in subsequent stages will depend on additional scientific information and evidence of need collected during this first stage of implementation.

The outcome of and specific sites for Stage 1 decisions will not be known until additional information, including need for mitigation, is available, and until the options to carry out these Stage 1 proposals have undergone environmental review. Consequently, the outcome could be altered as a result of that second tier environmental review and mitigation measures imposed as a part of those actions. However, as long as the impacts from the actions in Stage 1 have been included in the Programmatic EIS/EIR, the subsequent environmental documents can tier off the Programmatic document for cumulative and long-range impacts of the Programmatic decision.

CALFED BAY-DELTA PROGRAM MISSION STATEMENT AND SOLUTION PRINCIPLES

The mission of the CALFED Bay-Delta Program is to develop a long-term comprehensive plan that will restore ecological health and improve water management for beneficial uses of the Bay-Delta system.

In addition, any CALFED solution must satisfy the following solution principles:

- ***Reduce Conflicts in the System*** Solutions will reduce major conflicts among beneficial uses of water.
- ***Be Equitable*** Solutions will focus on solving problems in all problem areas. Improvements for some problems will not be made without corresponding improvements for other problems.
- ***Be Affordable*** Solutions will be implementable and maintainable within the foreseeable resources of the Program and stakeholders.
- ***Be Durable*** Solutions will have political and economic staying power and will sustain the resources they were designed to protect and enhance.
- ***Be Implementable*** Solutions will have broad public acceptance and legal feasibility, and will be timely and relatively simple to implement compared with other alternatives.
- ***Have No Significant Redirected Impacts*** Solutions will not solve problems in the Bay-Delta system by redirecting significant negative impacts, when viewed in their entirety, within the Bay-Delta or to other regions of California.

The following sections outline the components of a draft preferred program alternative, with primary emphasis on the concept of "staged implementation", conditions and linkages which guide initial and future implementation stages, and a list of example Stage 1 actions. These components form the basis of a preferred program alternative.

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Components of a Preferred Program Alternative

For CALFED to succeed, it must develop a program which both fulfills its mission and has broad support from government agencies and stakeholders. It is likely that stakeholder support will be contingent upon progressing on a number of issues, including the items listed below, **prior** to finalizing the preferred program alternative (see Section 2 for further description of components). The decision for a preferred program alternative must include agreement on:

- Finance Package
- Environmental Documentation
- Water Project Operating Rules
- Governance and Assurances
- Stage 1 Actions
- Conditions/Linkages
- Common Program Element Descriptions
- Storage and Conveyance Element Descriptions
- Long-term Implementation Plan

OTHER ISSUES BEING INTEGRATED INTO DRAFT PREFERRED PROGRAM ALTERNATIVE

- Area-of-Origin/Water Rights
- Common Pool
- Agricultural Land Impacts
- Need for ESA compliance
- Need for Coordinated Permitting
- Conjunctive Management Regional Concerns
- Coordinated Flood Control and Flood Plain Management
- North and South Delta Flood Improvements
- Recreation
- Needs of San Francisco Bay

Staged Implementation and Staged Decision Making

The complexity of the Bay-Delta system and the inability to predict future events and how the system will respond to management actions requires that an adaptive management philosophy and process be employed for every program element. The fundamental concept of adaptive management is that management prescriptions will be assessed and refined (adapted) according to new information in order to meet program goals and objectives. Adaptive management is an iterative process that involves: 1) identifying clear goals and objectives for the program elements; 2) using models to identify our understanding of the Bay-Delta system and to assess and prioritize a range of potential

Staged Implementation

- **Identify certain actions at the outset (for all stages).**
- **Identify possible actions for future stages with associated conditions and linkages to guide the decisions.** This will allow some decisions when more scientific information will be available and the effects of previous actions will be better known.

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actions to improve the system; 3) implementation of actions and research most likely to achieve goals and objectives and to improve our knowledge of the system; and 4) monitoring and assessment of actions to gain information to refine the models and alter future actions in order to meet program goals and objectives.

Central features of adaptive management are staged implementation and staged decision making. The preferred program alternative is composed of hundreds of individual actions that will be implemented and refined over the 20 to 30 year implementation period. Therefore, it is logical to implement the Program in stages according to major program milestones. The challenge in implementing the Program in stages is to allow actions that are ready to be taken immediately to go forward, while assuring that everyone has a stake in the successful completion of each stage.

Like implementation, the decision process will be staged to allow better decisions in adaptive management at the appropriate time. The programmatic nature of the EIS/EIR provides the general direction for long-term implementation but not the specific information necessary for every decision required during the 20-30 year implementation period. Not all decisions need to, or can, be made at the outset of implementation. Therefore, stages will be identified where there are logical implementation milestones and decision making points. In this way, adaptive management can be applied equally well to a series of incremental actions such as ecosystem restoration or for major single decision projects such as surface storage or conveyance.

Staged implementation for the CALFED preferred program alternative involves identifying certain actions for implementation for which there is general agreement and justification, and also developing conditions for future decisions and for moving beyond Stage 1. For some actions, certain predefined conditions would need to be met before actions could proceed. For example, certain conditions would be linked to the decision to construct major facilities. **Conditional decisions** on several program elements may be required at each stage of implementation. These require assurances that certain linkages, such as performance measures for each program element, are satisfied before making a decision to proceed.

Conditional Decision

For those areas of the Program where important linkages exist, the decision to proceed will be guided by a carefully crafted set of predefined conditions. Conditional decisions guided by the conditions and linkages will facilitate adaptive management.

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Implementation Strategies for Delta Conveyance and Surface Storage

Unlike the common program elements, the configuration for Delta conveyance and storage vary significantly among the alternatives. The following section describes how these variable elements will be implemented through a staged implementation and decision-making process. CALFED has developed strategies for implementation of Delta Conveyance and surface storage.

Delta Conveyance - Existing Delta channels will be an integral part of any CALFED decision for Delta conveyance. The reliance on these channels provides a shared interest in restoring, maintaining, and protecting Delta resources, including water supplies, water quality, levees, and natural habitat. Modifications to these through Delta channels can particularly improve in- Delta levee reliability, fisheries habitat, in-Delta water quality, and water supply reliability. Because improvements will take time to implement, CALFED must rely on existing Delta channels especially in the early years of Stage 1. Regardless of the ultimate choice made, it therefore makes sense to invest in these modifications to maximize chances that CALFED can meet the Program's objectives with the existing configuration.

The most controversial example of Delta conveyance involves the possible construction of an isolated facility as part of a dual conveyance system (see adjacent box). By resolving these concerns, the dual Delta conveyance may, in the future, have the potential to provide greater performance than other Delta conveyances. At this time, CALFED cannot rule out the potential need for a dual conveyance facility to achieve its mission. Neither can it conclude, based upon current information, that the facility is necessary for fulfilling that mission.

Because of the long lead time required to plan, design, permit, and construct any major water facility, the existing Delta channels must be used almost exclusively for a minimum of 10 years even if CALFED needs to move to a dual Delta conveyance sometime in the future. Therefore, CALFED has applied the adaptive

SOME STAKEHOLDER CONCERNS

* Many urban water users are concerned that drinking water quality may not improve sufficiently without an isolated facility to gain access to better quality water. In addition, many fish biologists are concerned that fish populations may never recover without an isolated facility. Other stakeholders believe that assurances for its proper use and other protections, such as in-Delta water quality, cannot be provided.

* The dual Delta conveyance with an isolated facility would significantly improve water quality for Delta exports and would lessen water diversion effects on most fish species. However CALFED would have to work out assurances for its proper use and other protections for in-Delta needs. Existing drinking water quality standards do not currently support the need for an isolated facility but these may change in the future. Also, it may be possible to recover fishery populations with the other actions of the Program, without an isolated facility.

* Some stakeholders believe it is important to make sure the isolated facility is a viable contingent strategy by continuing to study and test technical features, while others believe that no action should be taken to further study an isolated facility until more information is available.

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management principle by selecting a primary strategy and a contingent strategy for Delta conveyance:

- **Primary Strategy** - The primary strategy is to develop a through Delta conveyance alternative based on the existing Delta configuration and modifications. This strategy focuses on doing everything practical for making the through Delta conveyance work.

- **Contingent Strategy** - The contingent strategy is to include a dual Delta conveyance with an isolated facility in the future if the primary strategy does not meet CALFED goals and solution principles. Considering that there may be future public health necessity for improved drinking water quality and a need to significantly reduce water diversion effects to achieve fishery recovery, the dual Delta conveyance must remain a viable option for potential future implementation.

Surface Storage - Considering the magnitude of conflicts over available water in California and the differing local conditions, CALFED is proposing that a mix of all available water management options is the best approach for ensuring water supply reliability in the future. While aggressive implementation of water conservation, recycling, groundwater and conjunctive use is critically important for effective water management and for helping to reduce the growth in demand for water, new surface storage has the potential to provide additional multiple benefits. Surface storage can provide new opportunities for flood control, power generation and regulation, recreation, and overall improved water supply reliability for environmental flows and water users. Also, improved operating flexibility for overall water management is a major advantage of surface storage. By storing water during times of high flow and low environmental impact, more water is available for release for environmental purposes (including instream flows and managed wetlands) and consumptive purposes during dry periods when conflicts over water supplies are critical. Groundwater programs can be enhanced if surface storage is available to store high flows more quickly and release them for groundwater storage at slower rates. Water quality can benefit from flow changes resulting from surface storage. Water stored in new off-aqueduct surface storage could be released to meet export

SOME STAKEHOLDER CONCERNS

* There is considerable controversy over the need for surface storage. Some stakeholders believe that increased emphasis on water conservation, recycling, groundwater and conjunctive use, and other demand reduction would eliminate the need for new surface storage. Others believe that new surface storage is needed now due to recent reductions in available supplies by water reallocation to environmental uses, recent water shortages, and increasing demand.

* Some stakeholders believe that new storage should be provided, at historic cost levels, to replace water reallocated to environmental purposes. Others believe that beneficiaries should pay the full costs of any new storage.

* Some stakeholders believe surface storage is necessary for meeting ERP flow targets while other stakeholders believe that the ecosystem cannot tolerate additional diversions to storage.

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needs while curtailing export pumping from the Delta during times of heightened environmental sensitivity in the Delta.

The combination of better management using all available options provides more flexibility for operations and improves overall water supply reliability for all users. However, due to regulatory requirements, the major financial commitments, and the potential environmental impacts, new surface storage requires special consideration. CALFED believes more efficient use must be made of existing water supplies system-wide prior to building new surface storage. In addition, there must be enhanced opportunities for water transfers prior to building new surface storage. Therefore, CALFED's strategy is to provide a mix of all available water management options and to include surface storage as soon as predefined conditions and linkages for implementation are satisfied.

Stage 1 Implementation

Stage 1 is defined as the seven year period commencing with the final decisions on the Programmatic EIS/EIR.

This first stage begins a series of actions that will ultimately form the CALFED solution. Rather than leading directly to a specific, predefined outcome, the first stage initiates a process where the outcome is dependent on the results of future, predefined conditional decisions. In this way, the first stage could lead to a number of different outcomes with decisions made and implemented most intelligently based on real world experiences and data. As a result, the most cost-effective and environmentally sound actions can be implemented. The Stage 1 actions will be carefully selected to minimize the potential for spending money on improvements that would not be useful with future implementation actions. At the same time, CALFED recognizes the need for adaptive management and that some Stage 1 actions may need to be refined as better information becomes available in the future.

In order to succeed:

- Stage 1 must result in improvement for all program areas for the Bay-Delta system.
- Stage 1 must provide stability in the water resources management framework until actions in subsequent stages substantively reduce conflicts in the system.
- Stage 1 must improve conditions in the Bay-Delta for listed and proposed species. These actions can provide for species protection and begin the process of recovery.
- Stage 1 must have a mix of public and private funds based on "beneficiary pays" principle.
- Stage 1 must build the information base for the transition to Stage 2.

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- Stage 1 must address the conditions and linkages (assurances) necessary before proceeding with storage and conveyance.

Section 3, *DRAFT Stage 1 Implementation*, provides potential actions for each CALFED program element. CALFED anticipates further refinement of these actions based on agency and stakeholder input prior to issuance of the *Revised Draft Programmatic EIS/EIR*.

Conditions/Linkages for Future Decisions

Based on extensive stakeholder input and technical studies over the last three years, CALFED is crafting a proposed approach to developing the draft preferred program alternative. Discussion is beginning on conditions and linkages for a draft preferred program alternative. There are many potential linkages (many are assurance issues) among the various actions in the draft preferred alternative, which includes common program elements, storage, and conveyance. Future conditional decisions can be made depending on how the conditions and linkages are satisfied.

There is generally broad agreement on proceeding with the program elements for water quality, water use efficiency, ecosystem restoration, levee system integrity, water transfer framework and the watershed program, but only if implementation is linked to reasonable progress in all program elements. However, there is not agreement on the need for surface storage and dual Delta conveyance (with isolated facility) to achieve CALFED goals.

The following linkages and conditions for implementation are proposed to facilitate discussion among agencies and stakeholders:

1. **Program Element Linkages.** Meeting the CALFED mission statement and goals is dependent on significant progress on all program elements. Agency and stakeholder input is needed to make the linkages more specific and meaningful on the following items:

   - Water transfer framework
   - Water use efficiency
   - Levee system integrity
   - Ecosystem restoration
   - Water quality
   - Watershed program
   - Storage
   - Conveyance

   All program elements need to progress together. Progress in each element needs to be linked to progress in all other elements of the preferred program alternative. The Actions

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in Stage 2 proceed if there is reasonable progress for all program elements in Stage 1.

2. **Conveyance**. Agency and stakeholder input is needed to make the linkages and conditions for conveyance more specific and meaningful. The Delta conveyance element describes the various configurations of Delta channels for moving water through the Delta and to the major export facilities in the southern Delta. As mentioned previously, the primary strategy is to develop a through Delta conveyance alternative based on the existing Delta configuration and modifications. The contingent strategy is to include a dual Delta conveyance with an isolated facility if the primary strategy does not meet CALFED goals and solution principles. A decision to construct an isolated facility will be warranted if there is a **public health** necessity (e.g., bromide levels, or others) arising from technical or economic infeasibility of meeting standards for safe drinking water despite source water quality improvements afforded by the through Delta alternative, and application of treatment technology, or there is inability to achieve **fishery recovery** with continuing impacts of diversion from the south Delta. A combination of public health and fishery recovery factors could also trigger the decision for the isolated facility. These triggers are not time dependent (they could be reevaluated several times in the future). In addition, a decision to build an isolated facility would be coupled with each of the following assurances:

   a. Limit on the amount of water that can be exported (linked to water year type) but flexible enough to allow additional exports when new storage is built and export of water transfers under some circumstances
   b. Commitment (Delta standards or contracts including assurances for implementation, permits, financing, and O&M) to preserve in-Delta water quality sufficient to protect existing beneficial uses; e.g., assure that beneficial users of water have a right to receive water at some predefined quality or be paid to waive their rights
   c. Commitment to address potential seepage and flood impacts of an isolated facility along its alignment
   d. Long-term funding for Delta levees (perhaps tied to quantity of water moved in the isolated facility or other institutional assurances) and commitment to provide at cost, suitable excess excavated material from facility construction for levee and habitat improvements
   e. Reaffirm commitment to protect area of origin rights (e.g., water rights, groundwater protection, etc.)
   f. Completion of 404(b)(1) Clean Water Act compliance
   g. Site-specific environmental documentation, determination of consistency or compliance with state and federal regulations, and necessary permits, authorizations, or waivers are completed
   h. Demonstrated commitment to finance by beneficiaries
   i. Agreement on operating authority and operating criteria

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3. **Storage.** Agency and stakeholder input is needed to make the linkages and conditions for storage more specific and meaningful. Storage of water in surface reservoirs or groundwater basins can provide opportunities to improve the timing and availability of water for all uses. By storing water during times of high flow and low environmental impact, more water is available for release for environmental and consumptive purposes during dry periods when conflicts over water supplies are most critical.

   Groundwater/conjunctive use programs. Groundwater/conjunctive use programs will be constructed/implemented provided:

   a. Baseline groundwater monitoring, and groundwater modeling are established
   b. Site-specific environmental documentation, determination of consistency or compliance with state and federal regulations, and necessary permits, authorizations, or waivers are completed
   c. Demonstrated commitment to finance by beneficiaries
   d. Guidelines are in place to protect resources, address local concerns, and avoid potential impacts prior to implementing a conjunctive management operation. The draft guidelines developed to date include the following:
      - Funding support will be provided for local assessment of groundwater resources.
      - Conjunctive management programs will be voluntary.
      - The needs of landowners and users of local groundwater are protected.
      - Conjunctive management projects will be overseen by local agencies in partnership with other entities to assure that concerns are addressed through interest-based negotiation.
      - Groundwater withdrawals must be managed to avoid land subsidence and aquifer degradation.

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Surface Storage. New or expanded surface storage will be constructed provided each of the following is achieved:

a. A high level of water use efficiency is achieved throughout the solution area. Water retailers serving__% of the population in the solution area must implement certified urban water management plans and BMP implementation plans, and irrigation districts serving __% of the district acreage in the solution area must implement endorsed water management plans. In addition, water (agricultural, urban, and environmental) available from new storage will be delivered to agencies and other users that maintain certification or endorsement of their water conservation programs or plans.

b. Demonstrated progress on the water transfer framework

c. Demonstrated progress on groundwater and conjunctive use where consistent with local water management goals and subject to local restrictions

d. Demonstrated commitment to finance by beneficiaries

e. Completion of 404(b)(1) Clean Water Act compliance, including project site screening, least cost evaluations, and equivalency analyses to demonstrate the need for surface storage

f. Site-specific environmental documentation, determination of consistency or compliance with state and federal regulations, and necessary permits, authorizations, or waivers are completed

SOME STAKEHOLDER CONCERNS

* Some stakeholders believe that water is being used efficiently in the agricultural sector and that there are limited opportunities for improvement, particularly when viewed from the basin-wide perspective. Others believe that there are substantial opportunities for improvement through technological and management improvements.

* It is difficult to devise a single satisfactory efficiency performance measure for agricultural water use given the diverse economic and hydrographic conditions throughout California's agricultural regions.

* There is currently disagreement as to whether the criteria set forth in AB3616 or in the Central Valley Project Improvement Act should serve as the basis for determining the adequacy of agricultural water conservation plans.

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Section 2 - Status of Program Development at the Time of the ROD and Certification

In late 1999, the federal government will sign the Record of Decision (ROD) on the *Final Programmatic EIS/EIR* and the Secretary of Resources will certify that the documents were prepared in conformance with CEQA. Among other things, these "decision and approval" documents will include information on the preferred program alternative including refinement of program elements. The following provides initial thoughts on what will be included in the description of the preferred program alternative at the time of the ROD and certification.

Finance Package - The finance package will include the financing principles and general cost allocation strategy that outlines how program implementation will be funded (the specific agreements will be finalized in Stage 1). The following information will be available at the time of the ROD & Certification:

- **Estimate of total Program costs** for improvements, mitigation, and ongoing annual operating and maintenance costs (estimates also will be included in the long-term implementation plan)
- **Agreement on the financial principles and cost-sharing strategy** (final signed cost-share agreements will be prepared in each stage)
  - Benefits-based approach ("beneficiaries pay")
  - Public/user cost split
  - Crediting for other parallel efforts or contributions to Category III
  - Provisions for repayment of federal/state costs where appropriate
  - Cost allocation methodology or strategy
  - Implementation agreement

Environmental Documentation - This will provide a summary to document compliance with applicable environmental documentation requirements at the programmatic level. The following information will be available at the time of the ROD & Certification:

- **Programmatic EIS/EIR** including mitigation policy and principles
- **Programmatic conservation strategy** to provide the biological assessment for Federal and state ESA compliance (refinement will continue in Stage 1 as new actions are implemented). This will include the process for consideration of "safe harbor" protections for property owners where appropriate.
- **Programmatic 404(b)(1) of Clean Water Act** compliance
- **Other acts, executive orders,** and state/regional/local plan consistency

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Water Project Operating Rules - Stage 1 must provide stability in the water resources management framework until actions in subsequent stages substantively reduce conflicts in the system. An extension of the Accord may be the mechanism to cover operating rules until the ROD and Certification to meet regulatory requirements and provide certainty for all water users. Water project operating rules may need modification with changing conditions as the Program is implemented.

Governance and Assurances - An assurances package is a set of actions and mechanisms to assure that the Program will be implemented and operated as agreed. The assurances package will include mechanisms to be adopted immediately as well as a contingency process to address situations where a key element of the plan cannot be implemented as agreed. While the assurances package will be substantially complete before beginning Stage 1, some details remain to be finalized early in Stage 1 after the federal ROD and the state Certification. The following information will be available at the time of the ROD & Certification:

- **Programmatic conservation strategy** (refinement of the strategy will continue in Stage 1 where incidental take will be provided, where necessary, for those actions identified in the ROD to be completed during Stage 1)
- **Description of new institution/entity** and/or how agencies will coordinate
- **Description of process for stakeholder involvement**
- **Financial strategy and principles** (see above Finance Package)
- **Conditions and linkages** (see Conditions/Linkages for Future Decisions)
- **Final contingency response process** for unforseen circumstances
- **Details of the assurances package and operational rules** for Stage 1
- **Mitigation policy/principles/strategy**
- **Adaptive management principles** for each program element

Stage 1 Actions - The preferred program alternative will consist of many actions which will be implemented in stages over several decades. Three or more stages are anticipated. Stage 1 includes the actions for implementation in the first seven years (see Section 3 for Stage 1 actions). Due to the time delay in implementation, actions in subsequent stages will be less detailed and subject to refinement and further definition as more information becomes available.

Conditions/Linkages - Agreement on the conditions and linkages to guide progress from one stage of implementation to the next is necessary for a complete preferred program alternative (see Conditions/Linkages for Future Decisions).

Common Program Element Descriptions - Work is continuing on refining each program element in response to extensive comments on the *Draft Programmatic EIS/EIR*. The ROD and Certification will contain agreement on the level of programmatic detail contained in each of the six common program elements. The Programmatic EIS/EIR appendices contain detailed descriptions of each program element. The Long-Term Implementation Plan includes detailed implementation plans for each program element. The following is a summary of the expected

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status for each program element at the time of the ROD and Certification:

- **Water Transfer Framework** - The water transfer framework is designed to facilitate the water transfer process while protecting water rights and legal users of water and addressing and avoiding or mitigating other third-party impacts and local groundwater or environmental impacts. This element will propose a policy framework for water transfer rules, baseline data collection, public disclosure, and analysis and monitoring of water transfers, both short- and long-term. The first stage implements the processes which will continue in subsequent stages. The following information will be available at the time of the ROD & Certification:

  - **Description of the water transfer clearinghouse** to ensure public participation, disclose information, and monitor actual transfer impacts
  - **Description of streamlined technical, operational, and administrative rules** that govern water transfers
  - **Description of principles for access to state and federal facilities** and for allocating available transfer capacity
  - **Description of Stage 1 actions** (see Section 3 for Stage 1 actions)
  - **Implementation Plan** (see Long-Term Implementation Plan, under development)

- **Water Use Efficiency Program** - The water use efficiency element focuses on formulation of policies which support implementation of efficiency measures at the local and regional level. The role of CALFED agencies in water use efficiency will be twofold. First, they will offer support and incentives through expanded programs to provide planning, technical, and financial assistance. Second, the CALFED agencies will provide assurances that cost-effective efficiency measures are implemented. The following information will be available at the time of the ROD & Certification:

  - **A summary of the analysis of potential benefits and savings** from water use efficiency measures
  - **Description of requirements for agricultural conservation plans** under AB3616 and CVPIA (for measurement and volumetric pricing)
  - **Description of urban MOU process** and need for implementing legislation
  - **Description of available planning, technical, and financial assistance**
  - **Description of Stage 1 actions** (see Section 3)
  - **Implementation Plan** (see Long-Term Implementation Plan, under development)

- **Levee System Integrity Program** - The focus of the long-term levee protection element of the Program is to reduce the risk to land use and associated economic

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activities, water supply, infrastructure, and the ecosystem from catastrophic breaching of Delta levees. The following information will be available at the time of the ROD & Certification (see Section 3 for Stage 1 actions):

- **Plan for base-level funding** to provide distributed funding to participating local agencies
- **Plan for funding special improvement projects** for habitat and levee stabilization to augment the base-level funding
- **Plan for grant projects to develop best management practices for subsidence control**
- **An advanced measures plan and emergency management plan** to more effectively plan for and deal with potential levee disasters
- **A seismic risk assessment** to evaluate performance of the existing levee system during seismic events
- **Description of Stage 1 actions** (see Section 3)
- **Implementation Plan** (see Long-Term Implementation Plan, under development)

- **Ecosystem Restoration Program** - The ERP will provide a comprehensive strategic plan for improving and increasing aquatic and terrestrial habitats, improving ecological functions throughout the Bay-Delta system, and begin and accelerate the process of recovery . The following information will be available at the time of the ROD & Certification:

  - **Targets for implementation**; e.g. acres of various types of habitat, flow modification, etc.
  - **Package of ecological indicators** to help measure future success
  - **Description of the high priority actions** for Stage 1 implementation (see Section 3 for Stage 1 action list)
  - **Scientific evaluation needs** (see Section 3 for Stage 1 Monitoring, Research, and Adaptive Management)
  - **Implementation Plan** including integration with ongoing programs (see Long-Term Implementation Plan, under development)

- **Water Quality Program** - The water quality program will consist of a wide variety of actions to provide good water quality for environmental, agricultural, drinking water, industrial, and recreational beneficial uses of water. CALFED will rely extensively on existing local and regional water quality improvement activities, including provision for technical and funding support to build upon these activities as necessary to meet CALFED objectives. This will be accomplished through voluntary partnerships among governmental and private entities, and individual citizens. Regulatory agencies will, however, continue exercising their responsibilities, creating an incentive for stakeholders and

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agencies to work together through the CALFED program. The majority of water quality actions rely on comprehensive monitoring, assessment, and research to improve understanding of effective water quality management and control of water quality problems at their sources. The following information will be available at the time of the ROD & Certification:

- **Targets for implementation**
- **Description of proposed studies/testing/pilot evaluations**
- **Description of high-priority water quality improvement actions**
- **Description of Stage 1 actions** (see Section 3)
- **Implementation Plan** (see Long-Term Implementation Plan, under development)

- **Watershed Program** - The watershed program is designed to provide for coordination and integration of existing and future local watershed programs and to provide technical assistance and funding for watershed activities relevant to achieving the goals and objectives of the CALFED Bay-Delta Program. The watershed program encompasses all natural watersheds to the Bay-Delta system. The actions during Stage 1 are a mix of watershed program activities and demonstration projects designed to show benefits to the Bay-Delta system. The following information will be available at the time of the ROD & Certification:

  - **Description of the linkages** of the watershed program with other CALFED program elements
  - **Description of high priority watershed enhancement actions**
  - **Description of the coordination framework** to define roles, funding support, and communication
  - **Description of education and outreach** effort
  - **Description of process for evaluation** of success of the watershed program
  - **Description of plan to provide funding** and technical assistance to foster local watershed groups
  - **Description of watershed clearinghouse** function
  - **Establish watershed restoration project review panel**
  - **Description of Stage 1 Implementation Actions** (see Section 3)
  - **Implementation Plan** (see Long-Term Implementation Plan, under development)

Storage and Conveyance Element Descriptions - Work is continuing on refining the storage and conveyance program elements. The Programmatic EIS/EIR appendices contain detailed descriptions of each program element. The Long-Term Implementation Plan includes detailed implementation plans for each program element. The following is a summary of the expected status for each program element at the time of the ROD and Certification:

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- **South of Delta Groundwater Banking and Conjunctive Use** - This requires coordination with local agencies. This first stage includes construction of several projects. Additional projects, if feasible, could be constructed in later stages. The following information will be available at the time of the ROD & Certification:

  - **Description of linkages and conditions** for development (see Conditions/Linkages for Future Decisions)
  - **Description of most promising sites** for development
  - **Process for site-specific evaluation and permitting** (see Section 3 for Stage 1 storage evaluations)
  - **Description of Stage 1 actions** (see Section 3)
  - **Implementation Plan** (see Long-Term Implementation Plan, under development)

- **North of Delta Groundwater Banking and Conjunctive Use** - This is primarily a coordination effort with local implementing entities but could include some public projects. This first stage includes investigations for coordination with new regional surface storage. Projects, if feasible, could be constructed in later stages. The following information will be available at the time of the ROD & Certification:

  - **Description of linkages and conditions** for development (see Conditions/Linkages for Future Decisions)
  - **Process for site-specific evaluation and permitting** (see Section 3 for Stage 1 storage evaluations)
  - **Description of Stage 1 actions** (see Section 3)
  - **Implementation Plan** (see Long-Term Implementation Plan, under development)

- **Surface Storage** - Surface storage can be built upstream of the Delta, in- or near-Delta, and south of the Delta off-aqueduct if certain predefined conditions are met. Depending on environmental and engineering feasibility, the need, and beneficiaries commitment to pay, new offstream storage and/or expansion of existing onstream reservoirs could add up to several million acre-feet of new storage. The following information will be available at the time of the ROD & Certification:

  - **Description of linkages and conditions** for development (see Conditions/Linkages for Future Decisions)
  - **Cost share/financial principles** (see above Finance Package)
  - **Short list description of three to five most promising sites** for potential storage development (data available from in-progress site screening, programmatic NEPA/CEQA, 404 analysis including economic evaluation)

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- **Process for site specific evaluation and permitting** (see Section 3 for Stage 1 storage evaluations)
- **Description of Stage 1 actions** (see Section 3)
- **Implementation Plan** (see Long-Term Implementation Plan, under development)

- **Conveyance** - The primary strategy for Delta conveyance is to develop through Delta channels necessary to meet Program goals and solution principles. However, the contingent strategy is to use dual Delta conveyance with an isolated facility only if through Delta conveyance does not meet Program goals and solution principles. The following information will be available at the time of the ROD & Certification:

  - **Description of linkages and conditions** for development (see Conditions/Linkages for Future Decisions)
  - **Cost share/financial principles** to cover the range of potential conveyance improvements (see above Finance Package)
  - **Description of Stage 1 actions to implement south Delta improvements** (see Section 3 for Stage 1 actions)
  - **Operating rules** consistent with timing and configuration of actions planned for Stage 1
  - **Process for site specific evaluation and permitting** of north Delta improvements and the contingent strategy including an isolated facility (see Section 3 for Stage 1 storage evaluations)
  - **Implementation Plan** (see Long-Term Implementation Plan, under development)

Long-Term Implementation Plan - The long-term implementation plan will include a general plan (subject to adaptive management and the conditional decisions) for the 30-year Program implementation. The plan will also consolidate above information relating the finance package, water operating rules, governance and assurances, Stage 1 actions, conditions and linkages, and detailed implementation plans for each program element. The plan will also contain performance measures for each of the program elements.

These will be more fully developed as parts of the preferred program alternative for the *Revised Draft Programmatic EIS/EIR* in late 1998, the *Final Programmatic EIS/EIR* in late 1999 and the ROD and Certification of the final document. Prior to implementing site-specific actions, additional environmental review will take place, tiering off the Programmatic EIS/EIR.

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Section 3 - Stage 1 Implementation

(First seven Years Following ROD and Certification)

Stage 1 is defined as the seven year period commencing with the final decisions on the Programmatic EIS/EIR. Agreement on Stage 1 actions is only one part of the decision for a preferred program alternative.

The following pages provide more detail on potential actions for Stage 1. **The list of actions is intended as a starting point for discussions on potential Stage 1 implementation and will be refined and updated with input from CALFED agencies and stakeholders. These actions will be more fully developed as parts of the preferred program alternative for the *Revised Draft Programmatic EIS/EIR* in late 1998 and for the *Final Programmatic EIS/EIR* in late 1999.**

Adaptive management is an essential part of every program element to allow necessary adjustments as conditions change in future stages of implementation and as more is learned about the system and how it responds to restoration efforts. Consistent with the concept of adaptive management, some actions may need to be refined within the time frame of Stage 1 to reflect changing conditions or new information.

The outcome of and certain sites for Stage 1 decisions will not be known until additional information, including need for mitigation, is available and until the options to carry out these Stage 1 proposals have undergone environmental review. Consequently, the outcome could be altered as a result of that second tier environmental review and mitigation measures imposed as a part of those actions. However, as long as the impacts from the actions in Stage 1 have been included in the Programmatic EIS/EIR, the subsequent environmental documents can tier off the Programmatic document for cumulative and long-range impacts of the Programmatic decision.

Each potential action in the following Stage 1 list includes an estimate (in parenthesis) of when the action may occur within Stage 1. For example, "(yr 1)" indicates the action is expected to occur in the first year following the final decisions on the EIS/EIR.

Assurances & Institutional Arrangements

An assurances package is a set of actions and mechanisms to assure that the Program will be implemented and operated as agreed. The assurances package will include mechanisms to be adopted immediately as well as a contingency process to address situations where a key element of the plan cannot be implemented as agreed. While the principles for the assurances package will be substantially complete before beginning Stage 1, many details remain to be finalized early in Stage 1 after the federal ROD and the state Certification.

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1. Complete programmatic implementation plan (yr 1)
2. Finalize coordination among agencies or new entity (yr 1-3); e.g., provide for ecosystem restoration authority within the individual CALFED agencies or in a new organization with responsibility for ecosystem restoration
3. Refine conservation strategy (yr 1-3); e.g., incidental take will be provided, where necessary, for those actions identified in the ROD to be completed during Stage 1
4. Recommend legislation, if necessary, to implement new institutional arrangements or facilitate program implementation (yr 2-3); e.g., legislation to create a new entity or legislation to modify water transfer law and statutes to facilitate an appropriately protective water transfer framework recognizing law that may exist at that time
5. Incorporate the final State Board's water rights decision for allocation of responsibility to meet flow requirements for Water Quality Control Plan 95-IWR (May 1995) in water transfer and operational rules
6. Implement a CALFED environmental documentation and permit coordination process (yr 1-7)
7. Implement and revise contingency response as needed (yr 1-7)

Finance

The financial package will seek to finance the preferred program alternative, including needed mitigation, through a combination of federal, state, and user funds. This financing will continue over several decades as the various parts of the preferred program alternative are implemented, operated, and maintained. Stage 1 establishes the financial package for use in all stages.

1. Establish reliable short-term and long-term funding for each program element (1-7)
   - Finalize cost-share agreements (yr 1)
   - Finalize user fees (yr 1)
   - Seek federal authorization/appropriation and seek authority to sell state bonds (yr 1-7)

Monitoring, Research, and Adaptive Management

Establish monitoring for <u>all</u> program elements that focuses on obtaining data on a timely basis, providing interpretation of data, and maintaining data in an accessible and useful form. The monitoring, assessment of data, and resultant need for adaptive management are required throughout the CALFED Bay-Delta Program. The first stage refines the monitoring system and procedures which will continue in subsequent stages.

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1. Refine monitoring plan (CMARP) including all elements of the Program (yr 1)
2. Define adaptive management process for making adjustments as better information becomes available, including who makes future decisions, for all elements of the Program (yr 1); e.g., define triggers and time periods necessary for deciding need for change in management direction
3. Implement baseline monitoring plan under direction of a single umbrella entity as defined in CMARP with linkage to adaptive management process and provision for stakeholder input but provide for responsible agencies to conduct additional monitoring to meet their obligations in the event that needs cannot be met by baseline monitoring plan (yr 1-7)
4. Annual reports on status/progress and need for adjustments (yr 1-7)
5. Analysis of status and need for adjustments of actions for stage 2 (yr 5-7)
6. Provide input to assist adaptive management in program elements (yr 1-7); e.g., adaptive management for ecosystem restoration and water quality
7. Complete monitoring studies identified by diversion effects on fisheries team to provide feedback on actual diversion effects of south Delta pumps (yr 2-7)
8. Provide available data on need to reduce bromides, total dissolved solids, total organic carbon, pesticides and heavy metals (yr 5)
9. Provide available data on water quality in south Delta and lower San Joaquin River (yr 1-7)

Water Transfer Framework

The water transfer framework is designed to facilitate the water transfer process while protecting water rights and legal users of water and addressing and avoiding or mitigating other third-party impacts and local groundwater or environmental impacts. This element will propose a policy framework for water transfer rules, baseline data collection, public disclosure, and analysis and monitoring of water transfers, both short- and long-term. The first stage implements the processes which will continue in subsequent stages.

1. Establish water transfer clearinghouse to ensure public participation, disclose information, and monitor actual transfer impacts (yr 1)
2. Continue clearinghouse functions to provide information on environmental, economic and water resource protections (yr 2-7); e.g., third- party impacts, groundwater resource protection, instream flow [1707] transfers, and environmental protection in source areas
3. Coordinate with SWRCB, DWR, and USBR to formulate policy, under their existing authorities, for required water transfers analyses (yr 1)
4. Refine technical, operational, and administrative rules that govern water transfer transactions for all uses (yr 1-4); e.g., area of origin/watershed priorities,

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rules/guidelines for environmental water transfers, transferable water and the "no injury rule", operations criteria and/or carriage water requirements, reservoir refill criteria, and streamlined permitting process

5. Refine disclosure process that provides information regarding potential access to state and federal water facilities for movement of water transfers (yr 2); e.g. forecast opportunities to transfer water in existing project facilities, priority of transferred water in new facilities, and wheeling and power costs
6. Resolve allocation of available transfer capacity (yr 1)
7. Develop rules for allocation of wheeling and power costs in state and Federal conveyance facilities in compliance with CALFED "beneficiary pays" principle (yr 1)

Water Use Efficiency

The CALFED water use efficiency element focuses on formulation of policies which support implementation of efficiency measures at the local and regional level. The role of CALFED agencies in water use efficiency will be twofold. First, they will offer support and incentives through expanded programs to provide planning, technical, and financial assistance. Second, the CALFED agencies will provide assurances that cost-effective efficiency measures are implemented. The first stage implements the processes which will continue in subsequent stages. For a summary of stakeholder concerns including water use efficiency see page 14.

1. Expand DWR and USBR programs to provide technical and planning assistance to local agencies and explore new ways of developing assistance and involving other CALFED agencies (yr 1-7)
2. Develop mechanisms for approval authority for urban water management plans (yr 1-3); e.g., approved plans would be a condition for urban areas receiving CALFED benefits
3. Implement urban MOU process fully with certification of agency implementation plans (yr 3-7)
4. Implement the Agricultural Water Management Council (AB 3616) process fully with endorsement of agency plans under AB3616 and CVPIA (provided that the Council achieves broad stakeholder support) (yr 1-7); e.g., rely on Council to endorse plans of signatory member agencies as condition for receiving CALFED benefits; explore additional ways to build consensus on the process
5. Seek resolution to legal, institutional, and funding limitations for agricultural and urban water recycling (yr 1-3)
6. Participate in conservation and water recycling projects (yr 3-7); e.g., preferential funding assistance for projects providing multiple CALFED benefits such as agricultural tail water recycling which could benefit fish by reducing diversions, reduce pollutant loading, etc.

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7. Implement a methodology for refuge water management, including preparation of an *Effective Water Use Plan* and annual reports by each refuge manager (yr 1-7). Consistent with assurance mechanisms for urban and agricultural water users, access to CALFED benefits will be contingent upon continued implementation of the *Effective Water Use Plan* (yr 1-7).

Levees

The focus of the long-term levee protection element of the Program is to reduce the risk to land use and associated economic activities, water supply, infrastructure, and the ecosystem from catastrophic breaching of Delta levees. Levee protection is an ongoing effort which consists of:

- *Base-level funding to provide distributed funding to participating local agencies*
- *Funding of special improvement projects for habitat and levee stabilization to augment the base-level funding*
- *Grant projects to develop best management practices for subsidence control*
- *An advanced measures plan and emergency management plan to more effectively plan for and deal with potential levee disasters*
- *A seismic risk assessment to evaluate performance of the existing levee system during seismic events*

The first stage begins the decades-long process to improve reliability of Delta levees.

1. Develop and implement an outreach, coordination, and partnering program with local landowners including individuals, Reclamation Districts, Resource Conservation Districts, Water Authorities, irrigation districts, Farm Bureaus, etc. to assure participation in planning design, implementation, and management of levee projects
2. Obtain short-term federal and state funding authority as a bridge between the existing Delta Flood Protection Authority (AB360) and long-term levee funding (yr 1-5)
3. Obtain long-term federal and state funding authority (yr 1-7); e.g., the Corps of Engineers' current Delta Special Study would develop into a long-term Delta levee reconstruction program and the state would be the local cost-sharing partner
4. Maintain current federal cost-sharing of 65% and establish state and local cost-sharing percentages for all Program work (yr 1)
5. Conduct project level environmental documentation and obtain appropriate permits (yr 1-7)
6. Implement demonstration projects for levee designs that minimize the need for continuous disruption of habitat from levee maintenance and minimize the need

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for ongoing mitigation from disrupted habitat (yr 1-7)

7. Coordinate Delta levee improvements with ecosystem improvements (yr 1-7); e.g., coordinate improvements, modify maintenance manuals as appropriate to accommodate ERP actions near levees, separately track levee mitigation costs and ERP costs
8. Fund levee improvements up to PL84-99, approximately $114 million [$74 million during years 1 through 5 and $40 million during years 6 through 7] in first stage (yr 1-7); e.g., proportionally distribute available funds to entities making application for cost sharing of Delta levee improvements
9. Further improve levees which have significant statewide benefits, approximately $82 million [$58 million during years 1 through 5 and $24 million during years 6 through 7] in first stage (yr 1-7) ; e.g., statewide benefits to water quality, highways, etc.
10. Coordinate Delta levee improvements with Stage 1 water conveyance improvements and with potential conveyance improvements in subsequent stages (yr 1-7)
11. Institute Advanced Measures Plan and Emergency Management Plan (yr 1-7); e.g., establish $10 million revolving fund, refine command and control protocol, stockpile flood fighting supplies, establish standardized contracts for flood fighting and recovery operations, outline environmental considerations during an emergency
12. Initiate a subsidence control program to develop and implement BMP's for lands adjacent to levees, approximately $11 million for Stage 1 (yr 1-7)
13. Continue evaluation of seismic risk to integrity of the levee system and effective ways to mitigate that risk (yr 1-7)

Ecosystem Restoration

The CALFED ecosystem restoration program (ERP) is designed to improve and increase aquatic and terrestrial habitats and improve ecological functions in the Bay-Delta to support sustainable populations of diverse and valuable plant and animal species. A foundation of this program element is the restoration of ecological processes associated with streamflow, stream channels, watersheds, and floodplains. Implementation of the ERP over the 20 to 30 year implementation period will be guided through the Ecosystem Restoration Strategic Plan. The Strategic Plan will establish an adaptive management framework that translates goals, objectives, and principles into actions. ERP goals and objectives for ecosystem, habitat, and species rehabilitation are designed to produce measurable and progressive improvements to the Bay-Delta ecosystem that should result in a high level of ecosystem health and species recovery that exceeds existing regulatory requirements while continuing to allow beneficial uses of the Bay-Delta Ecosystem. The Stage 1 restoration efforts are structured to accomplish significant improvement in Bay-Delta ecological health through a large scale adaptive management approach in which the

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actions inform management decisions in later stages of implementation.

Success of ERP Stage 1 actions is also critically dependent on other program elements, including water quality improvement actions throughout the Bay-Delta watershed, levee integrity actions in the Delta, and integration with a watershed management strategy and a water transfers market. The priorities for restoration activities will be first on existing public lands as appropriate, second on acquisition of easements, and third on acquisition of fee title as necessary to achieve program objectives. Acquisition will be on a willing seller basis and with emphasis on local coordination and partnerships.

1. Develop and implement an outreach, coordination, and partnering program with local landowners including individuals, Reclamation Districts, Resource Conservation Districts, Water Authorities, irrigation districts, Farm Bureaus, etc. to assure participation in planning design, implementation, and management of ERP projects.
2. Project level environmental documentation and permitting as needed (yr 1-7)
3. Full coordination with other ongoing activities which address ecosystem restoration in the Bay-Delta system (yr 1-7); e.g., CVPIA, Four Pumps Agreement, etc.
4. Restore three major habitat corridors in the Delta (Yolo Bypass, Mokelumne, and San Joaquin - approximately 25,000 acres) with a mosaic of habitat types to improve ecological function and facilitate recovery of endangered species (yr 1-7)
5. Implement three large-scale, whole-stream restoration adaptive management (pilot) projects to inform Stage 2 decisions. Each pilot project will be structured according to adaptive management methodologies and monitored and evaluated to determine the ecosystem response throughout the Bay-Delta landscape.
   - Select three streams that meet adaptive management testing criteria (possibly Clear Creek, Deer Creek, and Tuolumne River) and implement all long-term restoration measures in the ERPP to determine the effectiveness of similar restoration for other streams in Stage II
   - Coordinate stream restoration with the watershed management common program strategy
6. Develop an ecosystem water market (potentially $20 million per year) (yr 1-7); e.g., acquire 100,000 acre-feet of water for critical ecosystem and species recovery needs
7. Pursue focused research to resolve the high priority issues and uncertainties associated with instream flow, exotic organisms, Bay-Delta food web dynamics, and other issues to inform the adaptive management process and make critical decisions in Stage 2 (yr 1-7)
8. Establish partnerships with universities for focused research
9. Complete the remaining 60% of the easements and/or acquisition for the Sacramento River meander corridor [approximately $30 million required] (yr 1-7).

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10. Acquire flood plain easements, consistent with ecosystem needs, along San Joaquin River (yr 4-7); e.g., there may be more opportunities for easements if Corps of Engineers proceeds with flood plan
11. Continue high priority actions that reduce stressors of direct mortality to fishes (yr 1-7):
    - Aggressively screen existing unscreened or poorly screened diversion on the Sacramento River, San Joaquin River, and tributary streams
    - Remove select physical barriers to fish passage
12. Continue gravel management (yr 5-7); e.g., isolate gravel pits on San Joaquin River tributaries and relocate gravel operations on Sacramento River tributaries (most gravel work would be implemented in subsequent stages with designs and plans for ecosystem reclamation of gravel mining sites)
13. Improve research, monitoring, detection, and control of exotic species (yr 1-7); e.g., border inspections, balanced management, water hyacinth control, funded early response
    - Implement invasive plant management program in Cache Creek
    - Develop ballast water management program
14. Continue scientific evaluations (yr 1-7); e.g., evaluation of instream flow needs
15. Explore ways to provide incremental improvements in ecosystem values throughout the Bay-Delta system in addition to habitat corridors described above (yr 1-7); e.g., pursue actions that are opportunity-based (willing sellers, funding, permitting, etc.), provide incremental improvements on private land through incentives, develop partnerships with farmers on "environmentally friendly" agricultural practices, etc.
16. Incorporate ecosystem improvements with levee associated subsidence reversal plans (yr 1-7)

Water Quality

The water quality program will consist of a wide variety of actions to provide good water quality for environmental, agricultural, drinking water, industrial, and recreational beneficial uses of water. The majority of current water quality actions rely on comprehensive monitoring, assessment, and research to improve understanding of effective water quality management and on the ultimate control of water quality problems at their sources. The Stage 1 water quality effort focuses on reducing constituents contributing toxicity to the ecosystem and affecting water users.

1. Project level environmental documentation and permitting as needed (yr 1-7)
2. Support ongoing (Department of Pesticide Regulation/State Water Resource Control Board MAA, the SWRCB nonpoint source Program, etc.) and develop new educational programs relating to urban and agricultural runoff (yr 2-7); e.g.,

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point-of-sale literature packaged with pesticide and herbicide materials, educate applicators on proper use of pesticides and herbicides, etc.

3. Initiate high priority water quality improvement actions (yr 1-7); e.g. for mercury, copper, selenium, pesticides, organic carbon, and improved salt management from agricultural drainage (including constituents such as bromide).
4. Studies/testing/pilot evaluations (yr 1-7); e.g., research Cache Creek mercury issues including habitat restoration potential for contributions to methyl mercury formation, research ecological effects of toxicants, research impacts of ecosystem restoration on organic carbon, research on reducing impacts of agricultural and urban discharges, conduct field level selenium exposure response studies
5. Implementation (and continued refinement) of needed actions based on results of the studies/testing/pilot evaluations (yr 3-7)
6. Continue to clarify use of and fine-tune water quality performance targets and goals (yr 1-7)
7. Participate in toxic site remediation if federal "Good Samaritan" protections are obtained (yr 3-7)
8. Coordinate with other programs (yr 1-7); e.g., recommendations of San Joaquin Valley Drainage Implementation Program, CVPIA) for retirement of lands with drainage problems that are not subject to correction in other ways
9. Develop a plan sufficient to meet forthcoming EPA and Department of Health Services standards for bromide (by yr 7)

Watershed Program

The watershed program is designed to provide for coordination and integration of existing and future local watershed programs and to provide technical assistance and funding for watershed activities relevant to achieving the goals and objectives of the CALFED Bay-Delta Program. The watershed program encompasses all natural watersheds to the Bay-Delta system. The actions during Stage 1 are a mix of watershed coordination activities and demonstration projects designed to show benefits to the Bay-Delta system.

1. Implement an outreach, coordination, and partnering program with local watershed groups including landowners, Resource Conservation Districts and watershed councils (yrs 1-7)
2. Provide watershed stewardship funds to local watershed groups (yrs 1-7)
3. Fund existing watershed clearinghouse functions to ensure public participation, disclose information, and monitor watershed projects (yrs 1-7)
4. Implement watershed restoration activities and/or demonstration projects, including those in the upper watershed, which demonstrate a benefit to restoring the Bay-Delta system (yrs 1-7)
5. Implement project level environmental documentation and permitting as needed

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(yrs 1-7)

6. Pursue and fund focused research to resolve the high priority issues and uncertainties associated with watershed restoration (yrs 1-7)
7. Develop and refine watershed conceptual models to quantify economic and non-economic benefits that accrue from watershed management or restoration activities (yr 1-3)
8. Establish and fund a watershed restoration project review panel to assist local watershed groups and private landowners in restoration project concept, design, and implementation (yrs 1-7)
9. Fund coordination with other CALFED and non-CALFED programs on watershed related activities (yrs 1-7)

Storage

New storage will be included in the preferred program alternative. Storage of water in surface reservoirs and groundwater basins can provide opportunities to improve the timing and availability of water for all uses when conditions (see pages 13 and 14) for implementation are satisfied.

South-of-Delta Groundwater Banking and Conjunctive Use - *This requires coordination with local agencies. This first stage includes construction of several projects. Additional projects, if feasible, could be constructed in later stages.*

1. Develop and implement a framework for groundwater banking and conjunctive use projects (yr 1)
2. Provide funding assistance for groundwater plan development (yr 1-7)
3. Identify potential projects and local cooperating entities and define CALFED role (yr 1-3)
4. Conduct baseline monitoring and modeling (yr 1-5)
5. Conduct field and pilot studies (yr 2-7)
6. Project environmental documentation and permitting (yr 3-7)
7. Project design (yr 4-7)
8. Conduct demonstration projects and construct two to three production facilities with target volume of 500,000 acre-feet storage (yr 1-7); e.g., potential options include Madera Ranch, Stockton East, expanded Kern Water Bank, and others
9. Study additional potential project sites (yr 2-7)

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North of Delta Groundwater Banking and Conjunctive Use - *This is primarily a coordination effort with local implementing entities but could include some public projects. This first stage includes investigations for coordination with new regional surface storage. Projects, if feasible, could be constructed in later stages.*

1. Develop and implement a framework for groundwater banking and conjunctive use projects (yr 1)
2. Provide funding assistance for groundwater plan development (yr 1-7)
3. Identify potential projects and local cooperating entities and define CALFED role (yr 1-3)
4. Initiate baseline monitoring and modeling (yr 1-7)
5. Initiate field and pilot studies (yr 2-7)
6. Project environmental documentation and permitting (yr 3-7)
7. Project design (yr 4-7)

Surface Storage - *Surface storage could be constructed upstream of the Delta, in or near the Delta, and/or storage filled by diversions through the Delta-Mendota Canal or the California Aqueduct. Depending on the amount of storage needed, new offstream storage and/or expansion of existing onstream reservoirs could add up to several million acre-feet of new storage. The first stage consists primarily of studies and evaluations necessary for permitting. This will allow surface storage projects to be ready for construction when the projects are selected for implementation. For a summary of stakeholder concerns including surface storage see page 9.*

1. Identify local cooperating entities and CALFED role (yr 1-3)
2. Environmental documentation (yr 1-5)
3. Feasibility studies (yr 1-5)
4. Field and pilot studies (yr 1-5)
5. 404(b)(1) analyses: project site screening, least cost evaluations, and equivalency analyses (yr 1-5)
6. Site selection (yr 4-5)
7. Evaluate improvements to potential conveyance to storage (yr 1-5)
8. Permits and operating agreements (yr 5-7)
9. Begin construction if predefined conditions and linkages are satisfied (yr 6-7)

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Conveyance

The conveyance element describes three configurations of Delta channels and related facilities for moving water through the Delta and to the major export facilities in the southern Delta:

- *The Delta channels are maintained essentially in their current configuration with some improvements in the southern Delta.*
- *Significant improvements to northern Delta channels would accompany the southern Delta improvements contemplated under the existing system conveyance above.*
- *The contingent strategy of the dual Delta conveyance is formed around a combination of modified Delta channels and a new canal or pipeline connecting the Sacramento River in the northern Delta to the SWP and CVP export facilities in the southern Delta.*

Much of the first stage consists of studies and evaluations of the major conveyance features. This will allow conveyance projects to be ready for permitting and construction in later stages should the projects be necessary to meet Program objectives. Some construction of improvements in the south and north Delta could occur within the first stage to improve conditions for ecosystem and water management reliability.

South Delta Improvements - *South Delta improvements consist of methods to control flow, stage and circulation, improve fish passage, fish screen and salvage facilities, and provide SWP/CVP interties upstream and downstream of the export pumps. South Delta conveyance improvements included in Stage 1 would function with either the primary or contingent conveyance strategy.*

1. Complete environmental documentation and permitting including 404(b)(1) analysis (yr 1-2)
2. Design south Delta improvements (yr 1); among others, such improvements could include:
   - Operable Old River fish barrier
   - Three south Delta waterway control structures
   - Clifton Court Forebay intake structure
   - Channel enlargement along Old River
   - Modified operation rules
3. Implement south Delta improvements [balanced to improve water supply and environmental conditions] (yr 2-4)
4. Implement an intertie between the Delta-Mendota Canal (at approximately Mile 8) and California Aqueduct downstream of export pumps (yr 2-4)
5. Construct fish screen demonstration project [full module of approximately 2500 cfs] for Tracy Pumping Plant (yr 1)

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6. Convert fish screen demonstration project at Tracy Pumping Plant to production facility and expand capacity if appropriate (yr 4-6)
7. Implement first increment of new south Delta screening [full module at north end of Clifton Court Forebay] (yr 2-6)
8. Evaluate (and/or pilot test) benefits/impacts of recirculation of a portion of Delta Mendota Canal flows through the Newman Wasteway to the San Joaquin River for water quality and ecosystem enhancement (yr 1-4)
9. Project environmental documentation and permitting for SWP/CVP intertie (yr 2-4)
10. Design SWP/CVP intertie upstream of export pumps [tie Tracy Pumping Plant to Clifton Court Forebay] (yr 5-6)

North Delta Improvements - *North Delta improvements consist of a new screened diversion and significant channel modifications including setback levees. The screened diversion and associated channels may be implemented in modular stages in order to resolve technical screening and fish passage issues at the appropriate scale. Stage 1 will focus on studies and design prior to construction. Select channel improvements may be constructed but the majority of the improvements, if any are selected, will be constructed in Stage 2. These through Delta improvements are the primary conveyance strategy of the preferred program alternative. However, a contingent strategy with dual Delta conveyance [through Delta with some isolated conveyance capacity] is maintained in case through Delta conveyance does not meet Program goals.*

1. Project environmental documentation (yr 1-5)
2. Feasibility studies for screened diversion and fish passage facilities, channel modifications, and habitat improvements (yr 1-5)
3. Field and pilot studies (yr 1-5)
4. Environmental documentation for land acquisition (yr 2-3)
5. Land acquisition (yr 4-6)
6. 404(b)(1) analyses; project site screening (yr 1-6)
7. Permits and operating agreements (yr 4-6)
8. Design of selected improvements (yr 4-6)
9. Construct selected improvements (yr 7)
10. Pilot studies for dredge material reuse (yr 1-7)

Isolated Facility - *The isolated facility consists of a new canal or pipeline connecting the Sacramento River in the northern Delta to the SWP and CVP export facilities in the southern Delta. CALFED is retaining the dual Delta conveyance with an isolated facility as a contingent strategy. However, as mentioned above, dual Delta conveyance will only be implemented if through Delta improvements do not meet Program goals and solution principles. The following Stage 1 actions provide progress on initial studies in case the isolated facility is found necessary to meet CALFED objectives. For a summary of*

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stakeholder concerns including water use efficiency see page 8.

1. Project environmental documentation (1-7)
2. Feasibility studies (yr 1-6)
3. Field and pilot studies (yr 1-6)
4. 404(b)(1) analyses; project site screening (yr 1-6)
5. Assess right-of-way issues that could impact CALFED's ability to maintain a viable contingency for a potential future habitat corridor and facility right-of-way (yr 2-7)

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