CALFED Water Management Strategy

Preliminary

Stage 1 Implementation Framework

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TABLE OF CONTENTS

I. Introduction 3

A. Scope 4

B. Timeline 5

C. Adaptive Management 5

II. Water Management Action Development 6

A. Early Stage 1 Actions 7
1. Managing the Existing System 7
2. Creating an Environmental Water Account 7
3. Water for EWA and Water Supply Enhancement 8
4. Water System Improvements 9

B. Late Stage 1 Actions 9
1. System Improvements 9
2. Efficiency Investments 10
3. Adaptive Regulatory Responses 10

III. Water Management Actions in Simulation Exercises 10

A. Objectives For Implementing Actions 11

B. Summary of Simulation Results 11

IV. Managing the Benefits From Water Management Actions *11*

A. Policies For Distributing Benefits 11

B. Operational Decisions 12

C. Finance 12

APPENDIX A - Description of Potential Water Management Tools

APPENDIX B - Potential Implementation Schedule for Most Promising Tools

E-007804

E-007804

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I. Introduction

The CALFED Bay-Delta Program will complete its Record of Decision (ROD) and Certification by mid-2000. That the ROD and Certification will reflect a 30-year horizon and a broad array of actions to restore the ecological health and improve water management for beneficial uses of the Bay-Delta system. As CALFED has prepared for long-term implementation, it has focused effort on prioritizing actions for Stage 1 -- the first seven years of the Program's implementation. Recent regulatory programs (e.g. ESA listings), water management decisions (e.g. B2 implementation, pending Trinity River flow decision) and increasing water demands have continued the longstanding conflicts between water diversions and fish.

In this context, Governor Gray Davis and Department of the Interior Secretary Bruce Babbitt called on CALFED leaders and stakeholders to create a "framework" for implementing near-term actions that can reduce such resource conflicts in the Delta. Specifically, they called for frameworks for an environmental water account (EWA) and the integrated storage investigation (ISI). As CALFED moved forward on developing the EWA framework, it became clear that – particularly in the near term – enhancing water supply for the environment would draw on the same set of actions including near-term storage, as the agricultural and urban water users need for water supply reliability.

CALFED agencies therefore directed attention toward developing key water supply actions for both ecosystem and water supply reliability needs. CALFED and stakeholders began by identifying a list of water management actions that could be developed during Stage 1A (the first 2-3 years). Computer model runs showed the possible benefits from implementing those actions for ecosystem and/or water supply reliability purposes. The goals of developing this preliminary framework were to:

1) achieve a level of fishery protection that would lead to an assurance to water users, pursuant to the Endangered Species Act, that no additional water would be required for fishery needs; and
2) provide as much additional water supply reliability as reasonably possible. Potential water quality impacts arising from implementing the actions, as modeled in the computer simulations, were also evaluated.

It is clear that the CALFED Stage 1 program needs to accomplish the following results, which depend on a successful water management program:

- progress toward ecosystem restoration in support of achieving recovery of listed species, as measured by increases in species populations and population resilience

- measurable improvements in water quality for drinking water purposes, particularly bromides and total organic carbon

- measurable improvements in water supplies and reliability for urban and agricultural uses

This "framework" in its final form needs to provide a clear direction for how these goals will be accomplished by the end of Stage 1. This draft is designed and intended for discussion with the full CALFED Water Management Development Team on December 8. Comments received during and after that meeting will be considered in redrafting a framework document for consideration by BDAC on December 14, and at the CALFED Policy Group on December 15.

This preliminary framework outlines how CALFED will begin implementing certain key water supply actions immediately after execution of the ROD and Certification. While some CALFED projects may require many years to accomplish, the ecosystem and water users cannot afford to wait 30 years for final implementation. CALFED is expected to achieve some progress on all of its goals during Stage 1. Near-term progress on these water management actions forms one of the cornerstones for CALFED's ultimate success. Section II describes these near-term actions and how they will be developed. Section III outlines the process for using the benefits from the actions.

A. Scope

This preliminary framework has objectives that mirror CALFED's Mission Statement. It seeks to improve – beyond existing regulatory conditions – both ecological health and water management for both the ecosystem and the water supply reliability. Because the most difficult conflicts between the ecosystem and the water users occur in the vicinity of the state and federal export facilities, the Implementation Framework focuses the most attention on actions that will reduce these conflicts. While some of the actions occur upstream from the Delta, all the actions provide some relief from the conflicts arising out of Delta exports.

The actions were chosen so they could be used under a wide range of scenarios. While developing this Implementation Framework, much discussion ensued about the baseline – i.e. the base conditions for water supply for water users and the environment from which proposed additions would be measured. The intense discussion reflected different methods of accounting for the water used for the various pre-implementation purposes. The conflict over baseline reflects a shortage of water for all Delta uses, making immediate implementation of these actions that much more critical. The conflict over the "baseline" indicates the urgency of reducing conflicts over the Delta's water.

One way of reducing such conflicts is to provide an endowment of water and/or funding for fishery needs that allows regulatory agencies that implement the federal and state Endangered Species Acts to provide some assurance that no additional involuntary water reallocation will be required for fishery purposes during Stage 1. This endowment has become known as the "Environmental Water Account" (EWA). This endowment would work in concert with habitat restoration actions contained in CALFED's Ecosystem Restoration Program to place the Delta's threatened and endangered species on a trajectory toward recovery. At the time of the Record of

Decision (ROD) and Certification, the California Department of Fish and Game, the United States Fish and Wildlife Service, and the National Marine Fisheries Service intend to provide such assurances to the state and federal water projects when the Ecosystem Restoration Program and the EWA described in this framework are formally established.

B. Timeline

CALFED agencies will begin implementing water management actions immediately after executing the Record of Decision. Each action has unique qualities that require different initial implementation steps and timeline. Some may provide immediate benefits. Others will require several years before benefits accrue. While the actions have been designed to minimize the need for additional legislative action, some may require additional appropriation or allocation of funds.

When will the final framework be decided? Work will continue on technical studies in early 2000, and additional work will be done with regard to economics and finance.

C. Adaptive Management

CALFED intends to use adaptive management in implementation of the WMS and the EWA. A central tenet of regulatory policies is certainty. Regulations are set in place to accomplish specific actions. Adaptive management, whose central tenet is uncertainty, can pose risk to protected or sensitive species, and habitats, as well as water supply reliability, and water quality. Many challenges go along with using an adaptive approach, most importantly recognizing the many uncertainties that exist.

The most significant element of uncertainty in the CALFED "equation" is the success of the ERP, and other planned programs that will contribute to large-scale ecosystem restoration and rehabilitation. Up to now, regulatory agencies have relied to a large extent on water measures to meet fishery needs - increased flows, decreased diversions, and other facility restrictions. While the water projects had introduced some non-water improvements (e.g., Shasta temperature control device), CALFED brought an entirely new focus: a substantial commitment to restoring ecosystem processes. This began with the creation of the "Category III" program in the 1994 Bay-Delta Accord, which resulted from discussions among Accord negotiators. Subsequently, CALFED, has focused on the restoring ecosystem processes and reducing and eliminating stressors, through the development of wetlands and shallow water habitat, restoration of historical spawning habitat, and other non-water measures (e.g., fish screens and barrier removal), which are hoped to ultimately contribute to increased fishery populations. Many specific ecosystem projects are underway, and the funding for many more has been secured through Proposition 204 and federal appropriations. Both the ERP and CMARP will be guided by adaptive management principles, and both will provide monitoring and assessment elements that will contribute to evaluating the success of restoration actions including those undertaken as part of the EWA.

CALFED is currently evaluating the relative ability of the water management tools to contribute, both individually and in combination, to water supply reliability, and how the different water management tools could be implemented over time. In addition, CALFED has established a process through the Delta Drinking Water Council to assess over time what the next best steps

E-007807

are to meet drinking water quality objectives. A combination of actions and studies will be developed and performed to drive important decisions on which additional measures or set of measures are most appropriate to meet CALFED's objectives. CMARP will provide data and information on the implementation of actions taken under the water quality program and will include baseline, trend, effectiveness, compliance, and operations monitoring, and it will assess trends, loads, and sources of important water quality constituents. CMARP will provide a feedback loop to help evaluate the relative contribution of all the water management actions to overall system reliability and water quality.

II. Water Management Action Development

CALFED has been using the term "tools" to describe a lengthy list of water management actions, including operational measures, water management coordination efforts, adaptive regulatory approaches, and physical storage and conveyance improvements that may be put into place during Stage 1. Each action has its own benefits and limitations. A detailed description of the potential actions is included in Appendix A of this Framework. The following summary provides the general categories of actions with promising examples of each.

CALFED is evaluating the possible benefits of each of these actions in the modeling or "simulation exercises." Given the limitations of the simulation models and the simplifying assumptions used in the modeling, these simulation exercises offer only general guidance on the desirability of particular actions. In addition, each action carries with it an institutional framework that may limit the action's usefulness or restrict its implementation. For example, CALFED has previously identified the potential benefits of new groundwater storage capacity in both the Sacramento and San Joaquin valleys. Initial simulation exercises have reconfirmed the benefits of groundwater storage in water management operations. Implementation of particular groundwater storage projects, however, raises significant issues of groundwater quality and quantity protection, as well as institutional issues such as ownership, control, and local vs. State regulation. In evaluating potential actions, CALFED has had to make preliminary assessments of implementability.

In developing and implementing actions for an Environmental Water Account and for water supply enhancements, CALFED is mindful of its commitment to continuous improvement in water quality for in-Delta and export purposes. In the simulation exercises, expected effects of action implementation on water quality are being evaluated to identify potential problems and opportunities. CALFED has previously identified a number of operational approaches and specific projects that could improve water quality. One example of an operational approach would be to establish a "Water Quality Account" (of water, money, or both) that could be managed in real-time to improve water quality. Specific projects are also under consideration. In any case, operation of the EWA and other water management actions, in concert with the other CALFED programs, will improve the Delta's water quality.

The following list of potential actions is divided into "Early Stage 1 Actions" (the first two or three years after the ROD and Certification) and "Later Stage 1 Actions" (the remainder of Stage 1). This division reflects CALFED's assessment as to how quickly these particular actions can be implemented. More comprehensive descriptions of these actions including cost

estimates, institutional issues and potential implementation time requirements are included in Appendix A.

A. Early Stage 1 Actions

In the first 2-3 years of Stage 1, CALFED will move forward with aggressive implementation of actions that have been used in the past on a temporary basis. These actions are described below. Other actions in the section dealing with water system improvements have been studied for many years and are already on a schedule for implementation early in Stage 1.

1. Managing the Existing System

In the last two or three years, conflicts over Delta diversions have forced CALFED agencies to turn to new water management approaches to balance environmental and water supply needs. Two actions in particular have offered substantial benefits in certain situations, and CALFED anticipates that these two actions will continue to be useful in the future, and particularly in Early Stage 1.

Joint Point of Diversion. CALFED envisions that maximizing the flexibility of using the "joint point of diversion" will be part of any Stage 1 water management plan. This concept allows the federal water project to use pumping capacity at the State's Banks Pumping Plant, or, conversely, allows the State Water Project to use pumping capacity at the federal Tracy pumping plant. In the past and in the current year, CALFED agencies have requested permission from the State Water Resources Control Board to use Joint Point of Diversion on a single-year basis. CALFED also anticipates that the State Board will make a final decision on ongoing use of Joint Point of Diversion when it issues its water rights decision in the near future.

Although the potential benefits of Joint Point of Diversion are substantial, they are also highly dependent on the particular hydrology of a given year. Further, conditions imposed on Joint Point of Diversion by the State Board or other regulatory agencies to mitigate possible water level, water quality or fishery impacts can also have an effect on the net benefits expected from Joint Point of Diversion.

Source Shifting/Demand Shifting. CALFED water management agencies have also found that voluntary shifts by water users in the timetable for water deliveries during the year, or temporary shifts by water users to non-project sources of supplies, have been extremely valuable in dealing with short term fluctuations in water supply availability. These approaches have been especially useful in addressing the so-called "low point" problem in the San Luis Reservoir (where reduced Delta pumping and increased demands combine to lower reservoir levels to a point where water quality problems occur). Issues associated with these "shifting" management techniques include compensating water users for extra costs incurred by the shift and allocating any increased risk caused by shifting.

2. Creating an Environmental Water Account

Many of the actions being considered for early Stage 1 explicitly address the question of creating an Environmental Water Account. A successful EWA would need to include a source of water supply as well as access to conveyance and storage. Costs and priorities for use would

need to be negotiated on a project-by-project basis. Similarly, the EWA could acquire water and/or storage space at existing groundwater storage facilities.

3. Water for EWA and Water Supply Enhancement

Another set of the Early Stage 1 Actions described in Appendix A are those that generate water supplies that could be used for either the EWA or for water supply enhancement. CALFED is aware that it is controversial to describe any actions as "generating water" or "creating new water." In effect, these actions only reallocate water from an existing consumptive or environmental beneficial use. CALFED emphasizes that it will be implementing these actions only to the extent that it can comply with existing laws protecting other water users and environmental values .

CALFED will need to make decisions about how the water supply benefits of these actions are allocated between an EWA and water users. This is discussed below in section III.

Increased Banks Pumping Capacity. Current regulatory agreements limit use of the State's Banks Pumping Plant to 6,680 cfs for much of the year. CALFED is considering increasing the State's pumping to 7,180 cfs between July 1 and September 30. This approach is described more fully in Appendix A. Any increase in pumping would require consultation with the U.S. Fish and Wildlife Service (FWS), National Marine Fisheries Service (NMFS), and California Department of Fish and Game (CDFG). In addition, the Corp of Engineers would need to issue a permit under Section 10 of the federal Rivers and Harbors Act.

Flexible Export/Inflow (E/I) Ratio. The 1995 Water Quality Control Plan and related ESA biological opinions all provide for the flexible application of the "E/I ratio" based on real-time evaluation of fishery conditions. Minor temporary adjustments to the E/I Ratio requirements can yield significant water supply benefits without adversely affecting environmental protection. CALFED intends to continue using this action during Stage 1.

Upstream Water Acquisitions. In recent years, CALFED agencies have been able to coordinate upstream water acquisitions to meet environmental goals under the CVPIA Anadromous Fish Restoration Program (AFRP) with pumping plans in the Delta to achieve incidental water supply benefits. Although the purpose of these water acquisitions must continue to be attaining high priority environmental needs identified in the AFRP or CALFED's ERP, CALFED believes that this coordinated approach for generating multiple benefits for water supply and the environment should be continued in Stage 1.

Land Retirement. CALFED has previously identified land retirement as a potential action in addressing water quality degradation due to irrigation drainage. The U.S. Bureau of Reclamation has initiated a land retirement program under the authority of the CVPIA. Although the primary purpose of a land retirement program is to achieve water quality goals, the program has associated water supply reliability benefits. Depending on how the program is structured, those water supply benefits can accrue to the water district containing the retired lands, or could become more generally available for other consumptive or environmental uses.

4. Water System Improvements

Given the longer lead time for construction projects generally, there are only a limited number of water system improvements that could be brought on-line during Early Stage 1. These include:

Integrated Storage Investigation. CALFED anticipates that its integrated storage investigation (ISI) will complete most of its evaluation of the desirability of different groundwater and surface storage facilities during Early Stage 1. The results of the ISI will guide subsequent site-specific evaluation of the most promising sites.

Intertie between State's California Aqueduct and Federal Delta-Mendota Canal. One possible conveyance improvement is an intertie between the two project conveyance canals leading south from the pumps. The principal advantage of an intertie is to allow the federal project to use its entire 4600 cfs pumping capacity during pumping windows.

South Delta Improvements. CALFED has identified the South Delta Improvement Program as a high priority for implementation during Stage 1. The program is designed to improve the reliability of the State's water project while ensuring that water of adequate quantity and quality is available for diversion to beneficial use within the south Delta. Any new facilities associated with the program will not be in place in early Stage 1. The water supply capability of the State's water project will be enhanced during that time by maximizing the amount of pumping through the existing intake gates at the State's Clifton Court Forebay while avoiding scouring south Delta channels and negative impacts to fish, water quality, and local water reliability. This operation will increase the capability above the current level but the maximum capability of Banks Pumping Plant will not be realized due to physical restrictions of the existing intake gates.

B. Late Stage 1 Actions

In the later years of Stage 1, CALFED will continue to implement the Early Stage 1 actions as appropriate. In addition, larger scale projects with longer start-up periods should be coming on line. Simulation exercises suggest that these additional actions could yield substantial benefits for both water supply and environmental protection by the end of Stage 1. The additional actions anticipated for Late Stage 1 are described below.

1. System Improvements

South Delta Improvements. It is anticipated that the new facilities associated with the South Delta Improvements Program will be constructed and operational in the latter part of Stage 1. These facilities will be designed to take advantage of the full pumping capacity of the State's Banks Pumping Plant, 10,300 cfs, and will include a set of new and much larger intake gates to Clifton Court Forebay. To assure water of adequate quantity and quality is available for diversion to beneficial use within the south Delta and contributions are made to restore the ecological health of fish, additional facilities and the corresponding operational rules will also be in place at that time.

New Surface Storage. CALFED has identified a number of potential surface storage projects that could conceivably be brought on line by the end of Stage 1. These include a variety

of configurations for in-Delta storage (Webb Tract, Bacon Island, Woodward Island, and Victoria Island), as well as a small increase (6 feet) in the height of the CVP's Shasta Dam. Substantial technical and institutional work remains to be done before these projects could be constructed and operated. Evaluation of these potential storage projects as well as other potential storage projects that might be implemented beyond Stage 1, are being coordinated under CALFED's Integrated Storage Investigation (ISI) is taking the lead on programmatic evaluation of these projects.

New Groundwater Storage. As noted above, simulation exercises have shown considerable benefits from increased groundwater storage capabilities. In the ISI, CALFED is evaluating several proposed groundwater storage projects throughout the Central Valley. These include southern Sacramento County, East San Joaquin Basin, Kings River Fan and Madera Ranch. In each case, CALFED needs to depend heavily on local partners to address the many local and regional issues associated with groundwater projects.

2. Efficiency Investments

Through its Water Use Efficiency Program, CALFED anticipates significant water supply benefits from investment in water use efficiency measures throughout the State. By coupling efficiency investments with transfer of conserved water, CALFED could apply these water savings to other environmental or water supply uses. Alternatively, the savings could be retained by the water users to contribute to improvement in their water supply reliability.

3. Adaptive Regulatory Responses

Although CALFED is not proposing specific changes to standards in the Clean Water Act or Endangered Species Act regulatory programs, both statutes include provisions for revising regulatory prescriptions in response to new information. During Stage 1, CALFED and the applicable regulatory agencies will evaluate opportunities to revise these regulatory prescriptions to achieve greater flexibility and enhanced environmental protection.

III. Water Management Actions in Simulation Exercises

Generally, once each action has been implemented, its benefits will be distributed to one or more agencies that will have the right to use those benefits. The recipient(s) of each action will be identified as part of the ROD and Certification. The distribution of the actions reflects the effectiveness of each action in serving either an ecological or water supply reliability purpose. In some circumstances, it is possible that water developed by a particular action could be used for different purposes at different times. In those cases, the ROD and Certification will identify the mechanisms for managing that action.

Clear objectives for operation of the actions will be needed for their implementation. Such objectives have not yet been developed and agreed to. Listed below are the ecological and water supply objectives used in the computer simulation studies to date. The final objectives will be included as part of the ROD and Certification.

A. Objectives For Implementing Actions

Determining how each action satisfied an ecological purpose, and/or a water supply reliability purpose started with establishing objectives for each. (Effects of the simulation on water quality were tracked throughout the simulation, and although specific actions were not implemented to improve water quality or to prevent degradation of water quality an effort was made to avoid impacts to water quality.) The objectives were drawn from the ecological or water supply needs after considering existing regulatory standards. Needs were not quantified, however each need was described based on a number of flow factors: timing, quantity, and quality. The ecological objectives were based on fishery needs, particularly related to export pumping. The water supply needs were based on maximizing south-of-Delta deliveries.

Ecological Objectives. For several fish species of concern, the state and federal fishery agencies identified flow-related actions in the Delta and upstream that will contribute to ERP goals of ecosystem restoration and species recovery. The goal of these actions is increased fish survival through reduced entrainment and flow-related habitat improvement.

Water Supply Objectives. The water supply objective was maximizing export deliveries. Without trying to determine the precise deficit of contract deliveries that export interests suffer, a clear and substantial need for water south of the Delta to improve reliability of those deliveries was identified. The actual amount of water that will be needed in any one year will depend on a number of factors, particularly the cost and the willingness of export interests to pay the costs of the actions.

B. Summary of Simulation Results

CALFED has achieved substantial progress in analyzing the effectiveness of each action in serving an ecological or water supply reliability purpose. CALFED agency staff, working with stakeholder technical representatives, modeled each action applying a variety of assumptions as to existing conditions. Applying the hydrology of several years, the modelers estimated the extent that the fishery objectives could be implemented. The modelers then estimated, after employing each action, the extent of fish entrained at the export pumps, which provided some indication of fishery survival, and the amount of additional water that could be exported south.

IV. Managing the Benefits From Water Management Actions

A. Policies For Distributing Benefits

While CALFED will distribute water management actions and their benefits as part of the Record of Decision, the principles listed below describe how the distribution will generally proceed throughout Stage 1.

- Ecosystem restoration, water supply reliability and water quality will benefit and improve.

- In allocating benefits, it is CALFED's intent to provide the EWA with sufficient assets to allow regulatory agencies to provide assurances that no additional water would be required for fishery needs.
- EWA water will not be used for existing regulatory obligations.
- Generally, if the Department of the Interior 's current implementation plan for Section 3406(b)(2) of the CVPIA prevails in the on-going litigation, the EWA will require fewer assets.
- Because many assets have long development times, both the EWA and water supply reliability will share in the gradual development of benefits during the early years of Stage 1.

Subsequent discussions and possible additional studies will provide guidance for the specific allocation of water management benefits.

B. Operational Decisions

Decisions as to whether benefits from particular actions are used in any particular year for ecological or water supply purposes will be made based on the criteria established in the Record of Decision, including the initial distribution of benefits. For example, benefits distributed to the EWA will be used if the asset will help fulfill: a) fishery objectives; b) restoration of ecological processes in the Delta; c) fishery experimental needs; or d) any other fishery need that research shows will help promote a healthy fishery. Assets distributed to water supply reliability purposes will be used when export interests suffer a deficit in their supplies and they are willing to pay the cost of implementing the action required to receive the benefit. The intended purpose identified in that initial distribution will have first priority for using the asset. If it is not needed, then the action's benefits will be available for the other purpose.

Once an action has been developed, control of its use will be transferred to the agency or agencies that can decide how to use benefits from that particular action. Control of benefits distributed to the EWA decisions will reside with the three fishery agencies – FWS, NMFS and CDFG. Decisions related to use of benefits distributed to water supply reliability will be the responsibility of the Bureau of Reclamation (Reclamation) and the California Department of Water Resources (DWR). All these decisions will be subject to adjustment based on CALFED's long-term governance arrangement.

C. Finance

Initial implementation of all the actions are expected to be financed by federal and state appropriations, including funding from Proposition 204 and subsequent state bonds. Such funding will allow for preparing the necessary environmental documentation, obtaining the necessary federal and/or state permits and gaining access to potential benefits from certain actions. (Access may be gained, for example, by acquiring an option agreement for purchasing water.) The ultimate beneficiary, however, is assumed to provide the funding for final implementation of the action.