

**WORK-IN-PROGRESS**

**STAFF DRAFT - *For Discussion Only***

# **ERRATA**

## **CALFED REVISED PHASE II REPORT**

**December 16, 1998**

**CALFED Bay-Delta Program  
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supply for environmental purposes during the driest years. These requirements have reduced the projects' flexibility to meet the water demand both in quantity and timing for exports from the Delta. Conflicts between protective environmental measures and Delta exports also reduce opportunities for market water transfers. There are concerns that additional restrictions that might be needed to protect species ~~or~~ for other regulatory purposes 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 conflict over supplies.

The primary water supply 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 increasing the ability and flexibility to store and transport water, reducing the impact of water diversions on the Bay-Delta system, and managing demand by increasing conservation and recycling and by water transfer markets.

**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. Bay-Delta water quality is a primary concern.

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 the primary productivity and ecological function of the Bay-Delta system. The Program's strategy to achieve the water quality objective 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 swamp and overflow lands 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 occurred (biological oxidation, peat fires, and wind erosion have lowered interior island elevations over time). 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, residences, wildlife habitat, and critical infrastructure can be flooded as a result of a levee failure. Levee

most serious challenges in terms of “assuring” that this solution would achieve and could be implemented to achieve the intended results. Since March 1998, development of the draft preferred program alternative has focused on assurances and on refining the technical analyses. The need for better assurances and scientific information led CALFED to more fully integrate adaptive management throughout the program elements. This led to a draft preferred program alternative that will be implemented in stages over time. Each stage begins implementation of certain actions, gathers scientific information to help future decisions on other actions, and provides greater assurances that actions within each stage will move forward together and will be operated as intended. The draft preferred program alternative is discussed in more detail in Chapter 4.

Since March 1998, CALFED used a number of additional analyses to help sort through the performance of the alternatives, answer additional questions, and develop a draft preferred program alternative that best meets the CALFED Bay-Delta Program purpose. These are summarized in the following sections.

### 3.1 Distinguishing Characteristics

Looking simultaneously at all the information on how well the alternatives meet the objectives and how well they satisfy the solution principles would be nearly impossible due to the large amount of information. Furthermore, many aspects of the alternatives do not vary from one alternative to another. They all include program elements that make significant progress toward meeting program objectives and reducing conflict in the system.

On the other hand, there are aspects that do differ among the alternatives and it is these aspects, or distinguishing characteristics, that guided the evaluation. These characteristics are important when assessing the performance, impacts and overall merits of each alternative. Following are the eighteen identified distinguishing characteristics:

- **In-Delta Water Quality** - provides a measure of **salinity** and **flow circulation** for four areas of the Delta. The measure focuses on water quality for in-Delta agricultural uses.
- **Export Water Quality** - provides a measure of **salinity, bromide, and total organic carbon** for four export diversion locations from the Delta. The measure focuses on municipal/industrial uses for the North Bay Aqueduct and Contra Costa Intake and for agricultural and municipal/industrial uses for the SWP and CVP export pumps in the south Delta.
- **Diversion Effects on Fisheries** - intended to include only the **direct effects on**

acquisition, and other first costs of the Program. Annual costs will include operation and maintenance, monitoring, reoccurring annual purchases, and other annual costs.

- **Assurances Difficulty** - is an estimate on how difficult it will be to formulate an assurance package and get consensus among agencies and stakeholders. It is not an assessment on the perceived effectiveness of the assurance package.
- **Habitat Impacts** - is an assessment of the adverse habitat impacts due to implementation of the ~~storage and conveyance facilities~~ CALFED actions.
- **Land Use Changes** - is primarily a measure of the amount of agricultural land that would change to other uses by implementation of the Program.
- **Socio-Economic Impacts** - include adverse and beneficial impacts on commercial and recreational fishing, farm workers, power production, and others indirectly affected by Program actions.
- **Consistency with Solution Principles** - provides a qualitative measure of how well the alternatives meet the Program solution principles. Alternatives which violate the solution principles are not likely to be practicable or implementable. The solution principles provide insight in considering tradeoffs among the other distinguishing characteristics in a balanced manner.
- **Ability to Phase (Stage) Facilities** - provides an indication on how easy it will be to stage implementation of storage and conveyance facilities over time.
- **Brackish Water Habitat** - In the Bay-Delta system there is a salinity gradient between fresh and salt water. The western Delta is an area of important aquatic habitat with salinity levels of approximately 2 parts per thousand. The location of this salt concentration, known as X2, is an indicator of effects on this critical brackish water habitat among the alternatives.

The March 1998 *Phase II Interim Report* provided a summary of preliminary analyses with these eighteen distinguishing characteristics. In these analyses, two key distinguishing characteristics were particularly important in identifying how well the alternatives perform. **Export Water Quality** and **Diversion Effects on Fisheries**, are highly dependent on the alternative selected. Therefore, irrespective of whether these two characteristics are the most important to selection of the preferred program alternative, they are the characteristics most dependent on that decision.

As mentioned previously, based on assumptions made for evaluations in the March 1998 *Phase II Interim Report*, the dual Delta conveyance with an isolated facility appeared to provide greater

(e.g. export/inflow ratios) in the Accord or during periods which the Accord and CVPIA did not address. The Deft recognized the need for CALFED to develop the means to reduce entrainment losses or other effects of the water project operations for the following:

1. Delta smelt adults (entrainment in December - March).
2. Delta smelt young (entrainment in April - August; take exceeded in late May/early June of recent years).
3. San Joaquin salmon fry (usually following high flows in January - March).
4. San Joaquin salmon smolts (portion of outmigrants not covered by 31-day VAMP).
5. Spring-run salmon yearlings (outmigrating in November - January).
6. Steelhead outmigrants (period variable from February - May, but passage swift).
7. Striped bass young of year (especially May - July).

The DEFT developed eight programmatic actions to maximize the chances of the through-Delta conveyance meeting the CALFED purpose:

- Restore a wide range of depleted habitat types for spawning, rearing, and migrating resident and anadromous fish.
- Manage the volume, durations, and pathways of flow, nutrient inputs, and other factors to assure adequate food supply in the Delta.
- Improve screens, screen unscreened diversions, change diversion locations, and consolidate diversions to improve survival of fish at the point of diversions.
- Change operations to improve survival of fish and to protect and improve food supply.
- Establish appropriate environmental cues to improve survival of migratory fish through the Delta.
- Identify and reduce, eliminate, and/or trap inputs of toxics throughout the watershed to reduce or eliminate toxicity of water and sediment in Delta channels.
- Reduce loadings and mobilization of contaminants and metals to reduce body burdens of contaminants and metals in aquatic organisms as necessary to eliminate human health risks from eating these organisms.

Manage exotic species to reduce their populations to levels that will not adversely impact native species.

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. These linked decisions on several program elements ~~may~~ 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.

Stage 1 begins with a series of actions which are considered the most cost-effective and environmentally sound for the comprehensive, long-term CALFED solution. Stage 1 does not have a predefined outcome, since future implementation decisions are conditioned by what we learn from implementation experience and monitoring of results. However, Stage 1 actions will be designed to provide continuous improvement in all problem areas. Stage 1 actions will be carefully selected to minimize the potential for spending money on improvements that would not be useful, considering the range of future potential implementation actions. CALFED recognizes that some Stage 1 actions may need refinement, or other actions may be introduced, as information improves.

In order to succeed Stage 1 must:

- Result in overall continuous improvement for all resource areas for the Bay-Delta system.
- Provide stability in the water resources management framework and reduce conflicts in the system.
- Improve conditions in the Bay-Delta system for listed and proposed species. These actions should provide for species protection and begin the process of recovery.
- Have a mix of public and private funds based on "beneficiary pays" principle.
- Build the information base for the transition to Stage 2.
- Address the conditions and linkages (assurances) necessary before proceeding with storage and conveyance.
- Include an ongoing stakeholder process to provide input to the decision making

- Restoring, protecting, and managing diverse habitat types representative of the Bay-Delta and its watershed.
- Restoring critical instream and channel-forming flows in Bay-Delta tributaries.
- Improving Delta outflow during key springtime periods.
- Reconnecting Bay-Delta tributaries with their floodplains through the construction of setback levees, the acquisition of flood easements, and the construction and expansion of flood bypasses.
- Developing assessment, prevention, and control programs for invasive species.
- Restoring aspects of the sediment regime by relocating instream and floodplain gravel mining, and by artificially introducing gravels to compensate for sediment trapped by dams.
- Reducing or eliminating fish passage barriers, including the removal of dams, construction of fish ladders, and construction of best available technology fish screens.
- Targeting research to provide information needed to define problems sufficiently and to design and prioritize restoration actions.

More information on the ecosystem restoration program will be included in the revised *Ecosystem Restoration Program Plan*.

CALFED seeks to preserve as much agricultural land as possible during implementation in Phase III consistent with meeting all Program goals. Some of the land needed for Program implementation is already owned by the government and that land will be used when appropriate. Partnerships with landowners, including easements with willing land owners, will be pursued when appropriate to obtain mutual benefit if the appropriate government land is not available. Acquisition of fee title to land will be from willing sellers only, and will be used when neither available government land nor partnerships are appropriate or cost effective for the specific need.

Many entities have expressed concerns about the effects of the CALFED Program (including especially the ERP and levee programs) on agricultural land. Agricultural resources are an important feature of the existing environment of the state and are recognized and protected under CEQA and state and federal policy. One of the major principles of the State's agricultural policy is to sustain the long-term productivity of the State's agriculture by conserving and protecting the soil, water, and air which are agriculture's basic resources. It is CALFED policy that adverse environmental effects to agricultural resources resulting from CALFED programs, projects, and

conservation certification process would operate within the context of measurable objectives established through the strategic planning process described below and an assurance package.

The draft Water Use Efficiency Program includes the actions listed below.

Water conservation related actions include:

- Work with the ~~California Urban Water Conservation Council and the Agricultural Water Management Council~~ to identify appropriate urban and agricultural water conservation measures, set appropriate levels of effort, and ~~identify a proper entity~~ to certify or endorse water suppliers that are implementing cost-effective feasible measures.
- Work with California Urban Water Conservation Council to establish an urban water conservation certification process and set appropriate levels of effort to ensure water suppliers are implementing cost-effective feasible measures.
- Expand state and federal programs to provide sharply increased levels of planning, technical, and financing assistance and develop new ways of providing assistance in the most effective manner.
- Help urban water suppliers comply with the Urban Water Management Planning Act.
- Help water suppliers and water users identify and implement water management measures that can yield multiple benefits including improved water quality and reduced ecosystem impacts.
- Identify and implement practices to improve water management on wildlife refuges.
- Gather better information on water use, identify opportunities to improve water use efficiency, and measure the effectiveness of conservation practices.
- Develop, in consultation with the Agricultural Water Management Council, a program of technical and financial incentives to achieve local-level implementation of water use efficiency measures in the agricultural sector.
- Identify, in region-specific Strategic Plans for Agricultural Areas, measurable objectives to assure improvements in water management.

Water recycling actions include:

- Help local and regional agencies comply with the water recycling provisions in the Urban Water Management Planning Act.
- Expand state and federal recycling programs in order to provide sharply increased levels of planning, technical, and financing assistance (both loans and grants), and develop new ways of providing assistance in the most effective manner.
- Provide regional planning assistance that can increase opportunities for use of recycled water.

Assurances will play a critical role in the Water Use Efficiency Program element. The assurance mechanisms are structured to ensure that urban and agricultural water users implement the appropriate efficiency measures. As a prerequisite to obtaining CALFED Program benefits (for example, participating as a buyer or seller in a water transfer, receiving water from a drought water bank, or receiving water made available solely because of supply enhancements such as new, expanded, or reoperated facilities) water suppliers will need to show that they are in compliance with the applicable urban or agricultural council agreements and applicable State law. This requirement will result in careful analysis and implementation of cost-effective conservation measures identified in those agreements.

A high level of water use efficiency is also expected to be required as a condition for permitting of any new surface storage projects. Widespread demonstration of efficient use by local water suppliers and irrigation districts will be a prerequisite to CALFED implementation of new storage projects. The definitions of "high level of water use efficiency" and "widespread demonstration of efficient use" will be established prior to the ROD.

Local water suppliers will rely on CALFED agencies to provide a high level of technical and financial assistance to support local conservation and recycling efforts. Adequate funding for assistance programs will be an important assurance for local agencies. CALFED's initial Stage 1 cost estimate for state and federal financial assistance is \$700 million which may be increased as the program is further refined.

Economic analyses are underway that will compare water use efficiency options (including conservation, recycling, and transfers) and new facilities and identify least-cost ways of meeting CALFED objectives. These analyses are expected to better define the mix of demand management and water supply options and water supplies from new facilities. CALFED will work with stakeholders on technical and implementation issues as these analyses proceed.

Also, CALFED will develop, after consultation with CALFED agencies, the Legislature, and stakeholders, state legislation that requires appropriate measurement or metering of water use for all water users in the state of California. In developing this legislation, important technical and stakeholder issues will be addressed to define "appropriate measurement," which is expected to vary by region. Aspects of this definition include the nature of regional differences, appropriate

- Legislature and stakeholders to determine whether additional legislation to protect water rights, including area of origin priorities, is necessary.**
- **A prioritization and schedule for implementing the tasks discussed below, with identification of the appropriate agency or agencies to be involved.**
  - **Based on the guidance in the Strategic Plan, establish a California Water Transfers Information Clearinghouse** to ensure that decisions regarding proposed water transfers can be made with all parties in possession of complete and accurate information and to provide information to facilitate assessment of potential third party impacts. The Clearinghouse would not function as a regulator, a market broker, or as a water bank. The Clearinghouse would:
    - Collect and disseminate data and information relating to water transfers and potential transfer impacts
    - Perform research using historic data to understand water transfer impacts
    - Provide a forum for discussion and ~~comment on~~ of proposed transfers
  - **Based on the recommendations of the Strategic Plan, streamline the approval process for those categories of transfers that generally have not caused appreciable concerns.**
    - **Coordination among CALFED agencies to formulate policy**, under their existing authorities, for required water transfer analysis. This would require all transfer proposals which are subject to approval by the SWRCB or that depend on access to state/federal conveyance facilities to include information regarding potential socio-economic, groundwater, and cumulative impacts at the time of submission for approval by the respective CALFED agency. It is anticipated that the required analysis would differ according to the category of proposed transfer (short term/long term, in basin/out of basin, large/small, etc.). Information would be provided by the transfer proponents. This is for public information purposes and would be disclosed through the California Water Transfers Information Clearinghouse.
    - **Development by CALFED agencies of a standardized checklist and analysis procedure** to be followed for each proposed water transfer that undergoes review by the SWRCB, DWR or USBR. This would guide transfer proponents through a series of questions, requesting specific information regarding the proposed transfer. This checklist would allow

- Sacramento River “Headwaters to the Ocean, Public Information and Education Program.”

Although the CALFED Watershed Program, as envisioned, can be implemented under existing State agency authorities, discussions with stakeholders and watershed groups have noted the merits of developing a state-wide statute encouraging watershed management efforts. Although all parties emphasize the need for watershed efforts to be driven at the local level, an umbrella statute providing broad guidance and targeting appropriate financial assistance may be desirable. CALFED will work with stakeholders and the Legislature to pursue this option.

The following are examples of watershed activities that can make improvements in each of the four CALFED problem areas:

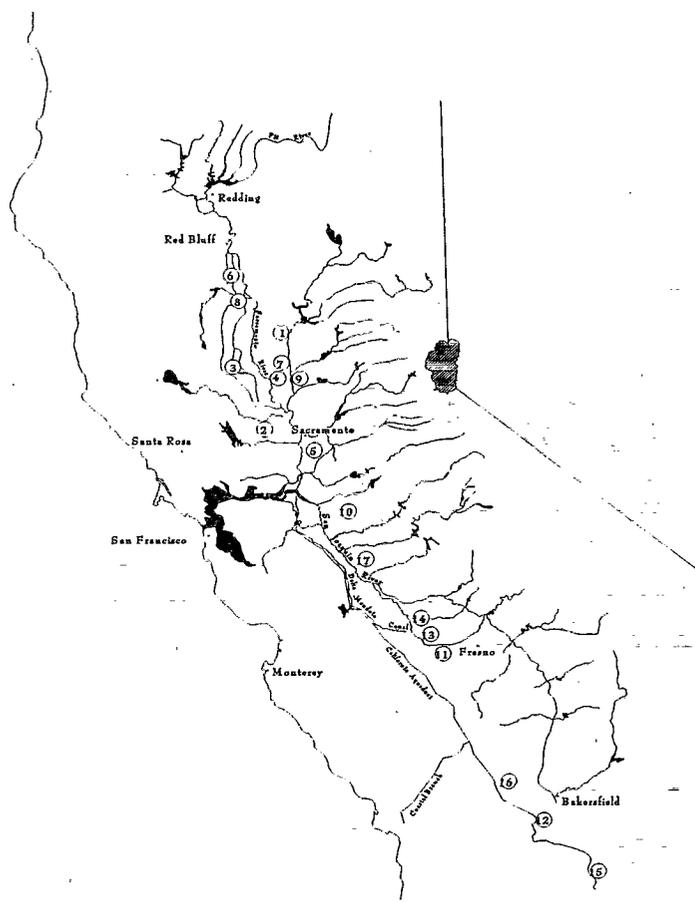
- **Ecosystem Quality** - Watershed activities that improve riparian habitat along streams, increase or improve fisheries habitat and passage, restore wetlands, or restore the natural stream morphology affecting downstream flows or species may benefit ecosystem quality.
- **Water Quality** - Watershed activities may benefit water quality in the Bay-Delta system by helping to identify and control non-point sources of pollution, and identify and implement methods to control or treat contaminants. Watershed activities which reduce the pollutant loads in streams, lakes, or reservoirs could measurably improve downstream water quality.
- **Water Supply Reliability** - As land use activities within a watershed intensify, the ability of that watershed to slow run off and allow water to percolate into aquifers tends to decrease. One result of this modified condition can be increased surface run off and higher peak flows during storms. This condition can make flood management more difficult, and reduce opportunities to capture runoff in downstream reservoirs. Activities designed to restore or enhance the ability of watersheds to absorb, store, and release water can reduce peak flows during storms and extend stream base flows through the dry season. The benefits of these activities include reduced flood risks, increased water supply reliability, and improved habitat conditions for fish and wildlife. Reoperation of existing single purpose hydroelectric power reservoirs may also achieve these benefits.
- **Levee and Channel Integrity** - Attenuation of flood flows coming from the upper watershed can provide benefits far downstream in the system. Delta levees are most vulnerable during high winter flows; watershed activities which reduce these flows can help maintain the integrity of the levees.

More information on the watershed program will be included in the revised *Watershed Program*

pursuing the appropriate mix of new storage in Stage 1. As part of the assurance package, these linkages will be reflected in a memorandum of agreement to be executed before no later than the ROD, articulating a Clean Water Act Section 404 compliance strategy and programmatic finding assurance on the need for storage facilities, based on the necessary technical and economic analyses.

Based on a programmatic evaluation of potential water supply benefits and practical consideration of acceptable levels of impacts and total costs, the range of total new storage considered for evaluation in Phase II was from zero up to about 6 MAF. This was considered a reasonable range for study purposes and impact analysis; more detailed study and significant interaction with stakeholders will be required before specific locations and sizes of new storage are proposed. However, most water supply benefits of Sacramento River off-stream surface storage are achieved with about 3 MAF of storage, while most water supply benefits of south of Delta off-aqueduct surface storage are attained with about 2 MAF of storage. Other types of surface storage considered in Phase II include San Joaquin River tributary storage and in-Delta storage. In addition, there may be significant opportunities for enhanced surface and groundwater storage within service areas dependent on Delta water for some or all of their supplies.

Groundwater banking and conjunctive use in the Sacramento and San Joaquin Valleys were also considered in Phase II. An initial inventory of potential groundwater storage opportunities was completed in 1997. Those opportunities are shown in the adjacent figure and the following table. The practical storage capacity available for groundwater storage in these areas will be determined only after detailed study of specific projects and full consideration of local concerns. For study purposes, groundwater storage volumes of 250 TAF in the Sacramento Valley and 500 TAF in the San Joaquin Valley were considered. During the first stage of the Program, the CALFED agencies intend to support the construction of at least two to three groundwater banking facilities with a target volume of 500,000 acre feet of storage. Any adverse environmental impacts will be mitigated.



- 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, aquifer degradation, and ecosystem degradation.
- Consistency with local groundwater plans (such as AB3030 Plans) and City and/or County Comprehensive General Plans

**Recreation.** CALFED seeks to plan for recreation enhancement and, if necessary, to mitigate impacts to Delta recreation resulting from CALFED activities designed to restore other Delta resources. Construction of new facilities will provide for appropriate on-site recreation development. The responsibilities and procedures for recreation development at new storage and other facilities is clearly addressed in current law. Federal and state laws and local laws and plans govern recreation developments associated with water development projects in and near the Delta. The Draft Programmatic EIS/EIR and accompanying technical reports address general impacts that CALFED Program implementation could have on recreational resources and on how the recreational resources could impact the other parts of the Program. The time line of such a process should be consistent with the Phase III documentation and implementation schedule, ensuring that recreation resources are appropriately considered as part of the Bay-Delta solution.

**Hydropower.** The CALFED Program has no specific objectives for hydropower generation. However, CALFED does seek to minimize negative impacts on resources, such as hydropower generation, during and after implementation. The Program may result in temporary or long-term changes in river and reservoir operations, which may affect the quantity, timing and value of hydropower produced within the Bay-Delta system. Also, additional pumping may increase the amount of Project Energy Use (power consumed by the CVP and the SWP to move water through the system). An increase in Project Energy Use can reduce the amount of surplus hydropower that might otherwise be available for sale from the CVP (necessary to repay Project debt), and may increase the amount of power that must be purchased from outside sources to meet SWP Project Energy Use. Replacement for reduced availability of renewable hydropower would likely come from fossil fuel or other thermal generation. CALFED is coordinating with the Western Area Power Administration to assure that issues are identified and properly framed, so consequences and options are clear to stakeholders, the public, and the CALFED decision-makers. In addition, single purpose hydroelectric power reservoirs present an opportunity for reoperation for multiple benefits, particularly when such reservoirs are up for sale. CALFED should assess the opportunities these present.

*actions to continually improve public health through improvements in drinking water quality which include studies and investigations that will contribute to an assessment on the need for additional conveyance actions and/or other means of providing better quality source water.*

1. Prepare project level environmental documentation and permitting as needed (yr 1-7).
2. Coordinate with other CALFED program elements to ensure that in-Delta modifications maximize potential for Delta water quality improvements (yr 1-7).
3. Continue to clarify use of and fine-tune water quality performance targets and goals (yr 1-7).
4. Conduct the following mercury evaluation and abatement work:
  - Cache Creek*
    - Risk appraisal and advisory for human health impacts of mercury (yr 1-5).
    - Support development and implementation of TMDL for mercury (yr 1-7).
    - Determine bioaccumulation effects in creek and delta (yr 1-4).
    - Source, transport, inventory, mapping and speciation of mercury (yr 1-7).
    - Information Management/Public Outreach (yr 5-7).
    - Participate in stage 1 remediation (drainage control) of mercury mines if federal Good Samaritan protection obtained (yr 3-5).
    - Investigate sources of high levels of bioavailable mercury (yr 4-7).
  - Sacramento River*
    - Investigate sources of high levels of bioavailable mercury, inventory, map, and refine other models (yr 3-7).
    - Participate in remedial activities (yr 7).
  - Delta*
    - Research methylization (part of bioaccumulation) process in Delta (yr 1-2).
    - Determine sediment mercury concentration in areas that would be dredged during levee maintenance or conveyance work (yr 3-7).
    - Determine potential impact of ecosystem restoration work on methyl mercury levels in lower and higher trophic level organisms (yr 3-5).
5. Conduct the following pesticide work:
  - Develop diazinon and chlorpyrifos hazard assessment criteria with DFG and the Department of Pesticide Regulations (yr 1).
  - Support development and implementation of a TMDL for diazinon (yr 1-7).
  - Develop BMPs for dormant spray and household uses (yr 1-3).
  - Study the ecological significance of pesticide discharges (using \$1.5 million of ERP funds) (yr-1-3).
  - Support implementation of BMPs (yr 2-7).
  - Monitor to determine effectiveness (yr 4-7).
6. Conduct the following heavy metals work:

- Determine spatial and temporal extent of metal pollution (yr 3-7).
  - Determine ecological significance and extent of copper contamination (yr 1-3).
  - Review impacts of other metals such as cadmium, zinc, and chromium (yr 1).
  - Participate in Brake Pad consortium to reduce introduction of copper (yr 1-7).
  - Partner with municipalities on evaluation and implementation of stormwater control facilities (yr 2-5).
  - Participate in remediation of mine sites as part of local watershed restoration and delta restoration (yr 2-7).
7. Conduct the following salinity reduction work in coordination with the San Joaquin Valley Drainage Program:
- Develop and implement supply water quality management activities to improve supply quality (yr 1-7).
  - Develop and implement a management plan to reduce drainage and reduce total salt load to the San Joaquin valley (yr 1-7).
  - Encourage source reduction programs including tiered pricing, expansion of drainage recirculation systems, land management, and land retirement where other options are infeasible (yr 1-3).
  - Conduct pilot projects to evaluate the feasibility of water reuse, through agroforestry, of various concentrations of saline water (yr 4-6).
  - Study feasibility of desalination methods including reverse osmosis (yr 7).
  - Study cogeneration desalination (yr 7).
  - Implement real time management of salt discharges (yr 3-7).
8. Conduct the following selenium work:
- Conduct selenium research to fill data gaps in order to refine regulatory goals of source control actions; determine bioavailability of selenium under several scenarios (yr 1-5).
  - Research interactions of mercury and selenium (yr 2-3).
  - Refine and implement real-time management of selenium discharges (yr 1-7).
  - Expand and implement source control and reuse programs (yr 1-7).
  - 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. (CVPIA alone will retire approximately 70,000 acres of land with selenium-caused water quality problems during time period of Stage 1.)
9. Conduct the following sediment reduction work/organochlorine pesticides:
- Participate in implementation of USDA sediment reduction program (yr 1-7).
  - Promote sediment reduction in construction arenas and urban SW, and

10. Acquire flood plain easements, consistent with ecosystem and flood control needs along the San Joaquin River in coordination with the Corps of Engineers' Sacramento and San Joaquin River Basins Comprehensive Study (yr 4-7).
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):
  - Implement invasive plant management program in Cache Creek.
  - Develop ballast water management program.
  - Develop early-response invasive organism control programs.
14. 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.
15. Incorporate ecosystem improvements with levee associated subsidence reversal plans (yr 1-7).
16. Evaluate the feasibility of harvest management to protect weaker stocks (yr 1-7).
17. Implement projects on selected streams to provide additional upstream fishery habitat ~~to remove dams or other barriers~~ by removing or modifying barriers (yr 1-7).

## 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 CALFED Water Use Efficiency Program will: 1) establish measurable objectives; 2) offer support and incentives through expanded programs to provide planning, technical, and financial assistance; 3) monitor progress towards objectives; and, 4) if these objectives are not met, re-evaluate objectives and management options. CALFED agencies will also support institutional arrangements that give local water suppliers an opportunity to demonstrate that cost-effective efficiency measures are being implemented. The first stage implements the processes which will continue in subsequent stages.*

*They are a mix of watershed coordination, restoration, maintenance, and conservation activities, as well as demonstration projects designed to show benefits to the Bay-Delta system while also benefitting existing watershed resources.*

1. Fund and implement watershed restoration, maintenance, conservation, and monitoring activities that support the goals and objectives of the CALFED Bay-Delta Program and that are locally controlled efforts (years 1-7).
2. Identify priority locations and implement watershed restoration activities which benefit restoration in the Bay-Delta system (years 1-7).
3. Assist local watershed groups and government agencies to address common issues, including roles and responsibilities, funding support, technical assistance, information exchange, and to ensure effective communication and implementation among government agencies and stakeholder groups (years 1-7).
4. Develop and implement a funding process and provide watershed stewardship funds to build the capacity of locally controlled watershed groups that ensure participation of local landowner groups (years 1-7).
5. Improve the use and usefulness of existing or future watershed clearinghouse functions to assist watershed groups with obtaining information on funding opportunities, technical assistance, and data storage and retrieval (years 1-7).
6. Ensure the completion of project level environmental documentation and permitting; assist with documentation and permitting processes as appropriate (years 1-7).
7. Evaluate the benefits (including economics) that accrue from watershed plans and projects designed to achieve CALFED goals and objectives (yr 1-7).
8. Establish, fund, and maintain watershed restoration and maintenance assistance to aid local watershed groups and private landowners in project concept, design, and implementation (years 1-7).
9. Coordinate with other CALFED and non-CALFED programs on watershed related activities (years 1-7).
10. Work with stakeholders and the Legislature to develop a state-wide umbrella watershed management act (yr 1-3).
11. In conjunction with FERC relicensing and with the consent of project owners/operators, perform reoperation analysis for existing single purpose hydroelectric power reservoirs to benefit local and downstream water users, water quality, and environmental issues. With consent of project owners/operators, implement changes in operations, including funding of acquisitions, where appropriate (yr 1-7).

- monitoring to meet their obligations in the event that needs cannot be met by baseline monitoring plan (yr 1-7).
6. Review the progress toward achieving CALFED goals and objectives and refine adaptive management and monitoring programs as needed to accommodate the information needed for that assessment process (yr 1).
  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)  
*[includes long-term, system wide, baseline monitoring with focused research to increase understanding of ecological process and ways to reduce uncertainty; definition of needed studies is currently under development, following are examples]*
    - Conduct focused research on Delta hydrodynamics and linkage to food web including relation to location of diversion point.
    - Study population trends of fish using the Delta, including fish salvage at south Delta export facilities, with emphasis on San Joaquin River fall run chinook salmon, delta smelt, and Mokelumne River fall run chinook salmon and steelhead trout.
    - Expand real-time monitoring for enhanced fish protections and flexible operations for water suppliers.
  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).
  10. Monitor and assess the impacts of water use efficiency measures on water demands and available supplies, and develop better information for water balances in the Bay-Delta system (yr 1-7).
  11. Prepare annual reports on status/progress and need for adjustments (yr 1-7).
  12. Analyze status and need for adjustments of actions for stage 2 (yr 5-7).
  13. Monitor and report land use changes, such as agricultural land conversion, resulting from CALFED actions (yr 2-7).

## 5.2 Water Project Operations for Stage 1

**See separate handout for December 16th**

## 6. OTHER CONTINUING/FUTURE WORK EFFORTS

### 6.1 Summary of Regulatory Compliance

The March Draft Programmatic EIS/EIR described how the CALFED Bay-Delta Program proposes to achieve programmatic compliance with several federal and state laws. Specifically, the CALFED Program proposes specific actions to comply with the programmatic requirements of the National Historic Preservation Act; the Memorandum on Farmland Preservation and the Farmland Protection Policy Act; the Federal Agricultural Improvement and Reform Act of 1996 and the 1985 Food Security Act; Executive Orders 11988 (Floodplain Management), 11990 (Protection of Wetlands), and 12898 (Environmental Justice); the Federal Clean Air Act; and the Federal Climate Change consideration under NEPA. Chapter 11 of the Main Document of the March Draft Programmatic EIS/EIR contains additional information regarding compliance with applicable laws and regulations.

Chapter 11 outlined programmatic compliance actions that still need to be initiated before the Final Programmatic EIS/EIR is completed. This section indicates how the CALFED Bay-Delta Program plans to comply with the federal/state Endangered Species Acts; Fish and Wildlife Coordination Act; 404(b)(1) Guidelines (Clean Water Act); and the Coastal Zone Management Act. Further compliance steps will be taken by agencies carrying out specific projects in Phase III.

#### Federal/State Endangered Species Acts

The CALFED Conservation Strategy (Strategy) is a comprehensive species and habitats conservation program that addresses the multiple species habitat needs and the maintenance of ecological functions within the CALFED Program area. The Strategy addresses species and habitats at the ecosystem level and provides for the integration of species specific conservation strategies at both the site-specific and landscape level.

~~The Strategy will not in and of itself provide "take" authorization under Federal Endangered Species Act (FESA) or the California Endangered Species Act (CESA). Rather, the Strategy will contain the necessary biological information, programmatic impact analysis and conservation measures such that the regulatory agencies can authorize incidental take through one of the following regulatory mechanisms:~~

The Strategy document is in preparation and addresses, at a programmatic level, all of

waters of the United States and will therefore require Department of the Army Permits under Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act (Section 404 Permits for short). The actions potentially range from major, highly controversial projects such as construction of new surface storage facilities to creation of new or enhanced wetlands habitat by contouring land and changing local hydrology. It is critical to the success of the Program that an effective strategy for addressing the Section 404 Permits process for this diverse range of potential actions be developed and agreed to prior to the Record of Decision for the Program.

Many stakeholders are urging that the U.S. Environmental Protection Agency and the Army Corps of Engineers issue a "programmatic" 404 permit that would assure that the CALFED solution actions would be permissible under a clearly defined process with appropriate decision criteria. The USACE Corps and USEPA have determined that the level of detail in the programmatic EIS/EIR for the CALFED preferred alternative will not establish a sufficient basis for a final determination of compliance with Section 404 as to any specific projects at the time of the Record of Decision, prior to the beginning of Stage 1. Although no site specific Section 404 permits will be available at the time of the Record of Decision, the Corps of Engineers, USEPA, the State of California, and CALFED staff are developing a plan to facilitate Section 404 permitting during Program implementation. The preliminary proposal includes:

- An early permitting process for those projects included in the initial CALFED actions during Stage 1 of Program implementation.
- Developing programmatic assurances regarding a process by which the surface storage facilities in the CALFED Program will be evaluated under Section 404. Establishing and defining this process will allow for a more expedited and limited Section 404 permit evaluation when CALFED Program elements need site specific permits.

Establishing these assurances would take place no later than the completion of the Record of Decision, and would include a Memorandum of Agreement between the USACE Corps, USEPA, and appropriate CALFED agencies, establishing the Section 404 compliance strategy. This MOA would include the following elements that would need to be satisfied to qualify specific water supply benefit projects for the programmatic assurances:

- Performance criteria for alternatives to surface storage, which would represent the limit of practicability for the purposes of Section 404(b)(1) Alternatives Analyses. Input for this element of the Section 404 compliance strategy is currently being developed as the result of several concurrent processes involving agency staffs and stakeholders for water use efficiency and water transfer actions.
- Commitment by all appropriate parties assuring full implementation of all relevant Stage 1 actions (including the performance criteria).