

## **Alternative 2**

# **Transfer Supplies for the Drought Water Bank**

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#### **Emphasis**

This alternative develops the institutional mechanisms necessary to establish a long-term drought water bank to provide increased security to environmental uses and CVP and SWP contractors. There are no other water supply programs identified in this alternative.

#### **Distinguishing Features**

##### Physical and Structural Features

No physical water supply features are developed in this alternative. This alternative promotes, through best management practices and efficient water management practices, the use of conservation and reclamation at the local level. Moderate habitat restoration improvements are included in this alternative. Also included are levee improvement to the Public Law 99 protection standards. Hatcheries on the San Joaquin River and its tributaries will be constructed or expanded to increase the production of fall-run salmon.

##### Operational and Management Features

No operational changes are suggested for water supply. About 100 TAF of water will be purchased from San Joaquin Valley water users to increase the management of flows for Delta smelt and other quality of biological concerns. The management of the Drought Water Bank will become long-term in nature, to develop reliable long-term agreement for drought water supplies. Conjunctive use will provide the majority of the drought supplies.

##### Institutional and Policy Features

The institutional mechanisms for long-term operation of the Drought Water Bank need to be put in place.

#### **Benefits**

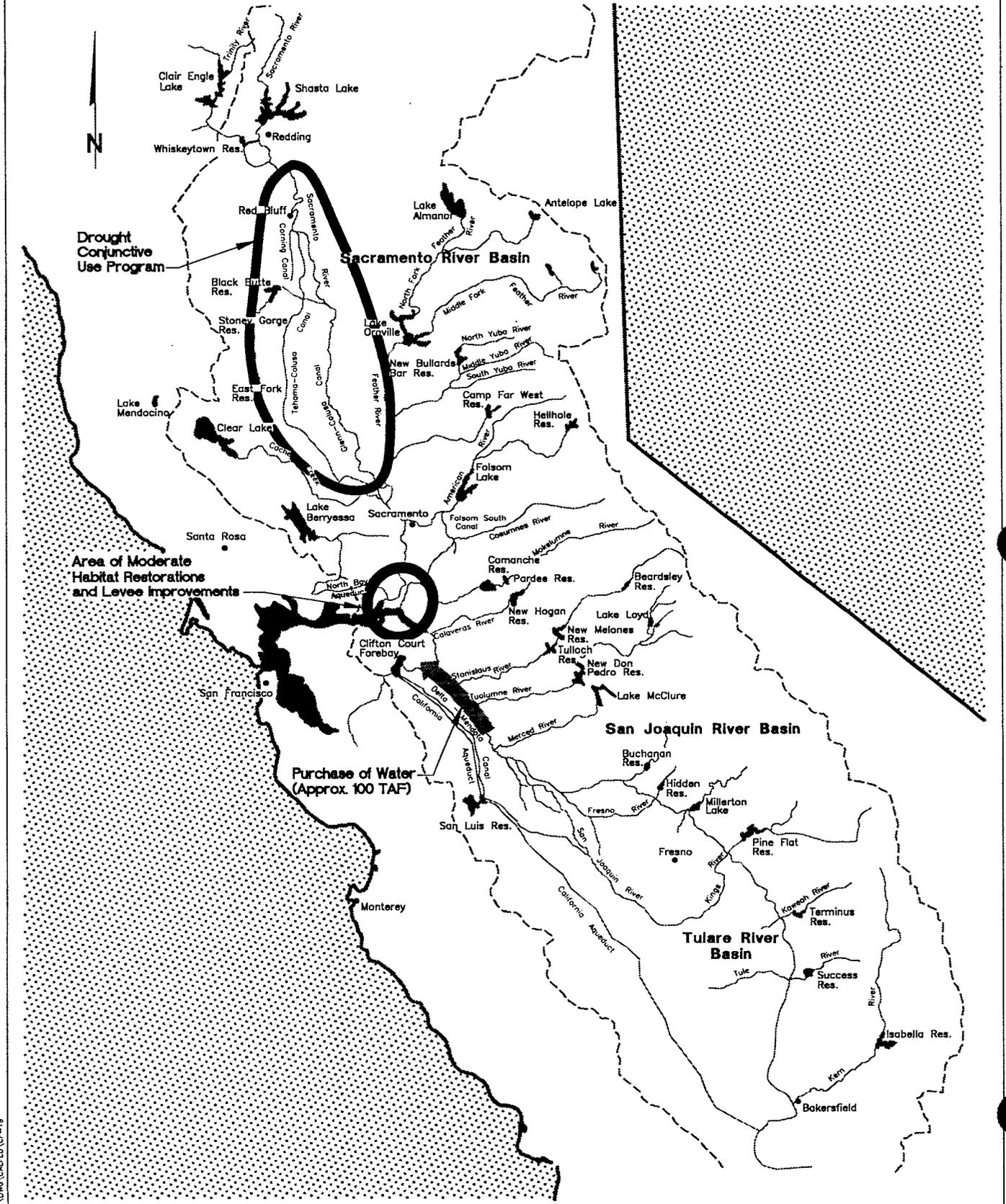
- Increases reliability and predictability of drought water supplies
- Improves physical habitat and levee stability

#### **Constraints and Concerns**

- Mortality in south Delta export facilities remains significant
- Export water quality remains problematic
- Delta water supplies are highly constrained and remain vulnerable to interruption
- Delta islands remain vulnerable to flooding

# Develop Transfer Supplies for Drought Water Bank

## Alternative 2



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## **Alternative 2**

### **Develop Transfer Supplies For Drought Water Bank**

This alternative focuses on increasing the predictability of water supplies during drought conditions only. To accomplish this a long term institutional mechanism for the current Drought Water Bank would be developed to acquire long-term water transfer supplies to meet environmental and export water needs during periods of restricted deliveries by the CVP and SWP. In addition water conservation and reclamation practices will be increased to reduce the overall demands on the system. This alternative proposes no changes to current Delta regulation, Delta export criteria, project permitted pumping capacity, or new structural improvements in the Delta.

Under this alternative no new water supplies are developed, except during drought periods. Delta exports will be operated as they have historically in compliance with current Bay-Delta water quality standards and endangered species restrictions. Moderate levels of habitat and levee improvements are included in this alternative to restore and protect Delta aquatic terrestrial species and land uses.

### **Physical and Structural Features**

***Migration Barriers***— Install fish migration barriers at Georgiana Slough and the Delta Cross Channel to reduce fish entrainment in the interior Delta. Work to improve the effectiveness of behavioral barriers.

***Delta Habitat Restoration***— Restore shallow water and tidal wetland habitat in the Delta to provide spawning areas, forage areas, and escape cover for juvenile salmon, Delta smelt, splittail, and other species. Candidate areas include Prospect Island, Liberty Island, Little Holland Tract, Decker Island, Hastings Tract, Yolo Bypass, and the southeast Delta. Also restore shallow water shoreline habitat along margins of the lower Sacramento and San Joaquin channels, and tributary sloughs including Georgianna Slough, Barker Slough, Lindsey Slough, and Parker Island. Riparian, wetland, and terrestrial habitat would also be restored on Delta islands and upland areas adjacent to river channels.

**Sacramento River Habitat Restoration**— Restore habitat and geomorphic processes along the Sacramento River upstream of the Delta to increase survival and spawning success of anadromous fish, and to provide other benefits. Construct segments of meander belt where feasible (such as Red Bluff to Colusa) and restore segments of riparian habitat in more controlled stretches of the river (Colusa to Knights Landing).

**San Joaquin River Habitat Restoration**— Restore channel features to improve fish survival. Actions may include restoration of deeper, narrower channel areas to keep water cooler, and isolation of quarry areas to protect young fish from predation and straying.

**Bay Habitat Restoration**— Restore about 5,000 acres of tidal wetlands between Collinsville and Carquinez Strait. Actions may include conversion of diked wetlands to tidal wetlands or use of dredge spoils to create wetland areas. The resulting habitat types will provide wet year spawning habitat for Delta smelt, rearing areas for salmon, as well as habitat for diverse wildlife including canvasback and redhead ducks.

**Channel Islands**— Restore and protect channel islands. Evaluate contribution of upstream meander belts to sediment deposition at channel islands. Establish zones for different types of boating use so some areas are protected from large boat wakes.

**Install Bypass at Mouth of Old River**— Construct a bypass at the mouth of Old River that will encourage outmigrants to stay in San Joaquin River while allowing a managed flow down Old River.

**Fish Screens**— Increase the efficiency at screens associated with the CVP and SWP export facilities. Install fish screens on diversions over 100 cfs that are on fish migration routes in the Delta, rivers, and tributaries.

**Other Programs**— Implement recommended habitat restoration actions from other programs, including CVPIA and the Anadromous Fish Restoration Plan. Examples of specific actions include small dam removal on Clear Creek, dam removal on Battle Creek, establishment of a population of winter run chinook salmon on Battle Creek.

**Sacramento River Habitat Restoration Feasibility Study**— Restore riparian, shaded riverine, and shallow water habitat along the Sacramento River from Sacramento to Collinsville. First step will be to provide matching funds for Corps of Engineers feasibility study. Subsequent restoration would be funded 75% by COE.

***Flood Protection Level***— Action provides a moderate level of protection to Delta system levees. First, all levees not yet providing a level of protection equivalent to the hazard mitigation plan (HMP) will receive the necessary upgrades to their levees to meet HMP standards. A level of flood protection equivalent to the US Army Corps of Engineers' Public Law (PL)- 99 standard would be provided to: 1) critical western Delta islands (such as Sherman and Jersey islands), with important regional infrastructure (e.g. the Mokelumne Aqueduct, transmission lines, Highway 160, etc.); 2) other islands having infrastructure of local importance (such as New Hope Tract, Bouldin Island, Sherman Island, Palm Tract, Lower and Upper Jones Tracts, and Lower Roberts Island); and 3) islands having valuable habitat, but not necessarily infrastructure, (including, but not necessarily limited to Canal Ranch, Brack Tract, Staten Island, Venice Island, Rindge Tract, Webb Tract, Big Mandeville Island, Twitchell Island, and Bradford Island).

***Channel Improvements and Levee Maintenance***— A moderate level of channel improvements (e.g. widening for improved conveyance), levee maintenance and stabilization (e.g. stabilizing berms), the modification of agricultural practices to reduce subsidence potential, setback levees, providing funding for maintenance and stabilization, and maintaining and/or reconstructing levees are indicative of the range of actions that would be implemented with the intent of reducing the risk of the Delta levee system with respect to its value in providing water supply, water quality, ecosystem quality, and land use/infrastructure benefits.

## **Operational and Management Features**

***Water Transfers***— Using long-term arrangements and a conjunctive use program, supplies will be developed to meet drought condition needs. The Drought Water Bank or its predecessor will develop institutional mechanisms to acquire long-term or permanent arrangements for supplemental drought water. The water developed through this program will be available to use for environmental or export needs. To ease the implementation of water transfers a programmatic environmental impact statement (PEIS) would be prepared to define criteria for transferring water through the Delta. The PEIS would also identify appropriate and streamlined refill impact criteria.

***Delta Real-Time Management Program***— Develop a real-time management program for efficient operations of the Delta Cross Channel, migration barriers, export and Delta outflows, fish salvage operations and hatchery programs. Such a management program should consider the appointment of a Delta water master to oversee the effective

management of Delta programs related to movement of water for export, local diversion, and environmental needs.

***In-Lieu Groundwater Banking***— To provide additional insurance for drought conditions and to provide assistance to the current over-draft conditions in the San Joaquin Valley and the Tulare Basin an in-lieu groundwater program would be developed. Under this program surface water would be provided to irrigators who currently rely on groundwater in areas that are in over-draft. Surface water provided to groundwater-dependant irrigators would be considered stored as forgone groundwater extractions. During periods of drought or other deficiencies in the ability of the projects to serve surface water, these irrigators would return to groundwater extraction. This would reduce the demand for water during critical periods.

***Obtain Environmental Water***— Obtain about 100,000 acre feet from San Joaquin water users to reduce conflicts between fisheries and diversions. Water could be used to provide pulse flows to move Delta smelt downstream, away from diversion points. Another use might be dilution of poor quality San Joaquin River flows, providing benefits for fisheries, water supply, and water quality. New south-of-Delta storage would allow this water to be used as exchange water so that Delta diversions could be reduced at critical times to protect fisheries without affecting export supplies.

***Conservation***— Best Management Practices (BMPs) for the urban sector will be improved and requirements for their implementation will become more stringent. Additional BMPs will include such actions as requiring inclining block rates to encourage reduced use in landscape irrigation and increased efficiency in in-home water using appliances. BMPs for industrial users will also be improved as will their requirements for implementation. In the agricultural sector Efficient Water Management Practices (EWMPs) will be improved to include installation of measurement devices and water pricing structures to encourage optimum management and efficient use of water.

***Reclamation***— Implement reclamation and reuse projects for urban and agricultural supplies were feasible. The state and federal projects could co-sponsor projects that would increase the efficient reuse of water and decrease demand or ensure predictability for water supplies in state and federal water service areas. Examples of projects be the use of grey water for landscape irrigation in urban areas, particularly areas of new development, and reclamation projects that would supply local agricultural users with reclaimed water. The emphasis would be on local projects.

***Reduce Fish Entrainment and Losses at CVP and SWP Facilities***— Reduce entrainment and mortality of fish at Banks and Tracy pumping plants. Measures to reduce entrainment and losses should include:

- Improve fish salvage and handling.
- Monitor entrainment on a real time basis to identify periods of peak susceptibility of various species.
- Control predation at both facilities.
- Coordinate operations of two diversions, including interchangeable pumping, to reduce combined losses.

***Hatchery Management***— Increase hatchery production for fall run salmon on the San Joaquin River or its tributaries. Hatchery production will help re establish the fall run salmon population.

### **Institutional and Policy Features**

***Drought Water Bank***— The Drought Water Bank or its predecessor will develop institutional mechanisms to acquire long-term drought water contracts. The Bank would also develop conjunctive use operations which would be implemented during drought conditions. The Bank would also prepare necessary environmental documentation to ease the implementation of water transfer during drought conditions. The Bank would also operate as a broker between sellers and buyers.

***Subsidence Reduction***— Efforts to reduce the subsidence on Delta islands with deep peat soils (such as parts of Grand, Twitchell, Sherman, Andrus, and Bouldin islands) will include the establishment of a landside buffer zone between 50 and 100 yards in width, located adjacent to the levee.

***Emergency Levee Management Plan***— An emergency levee management plan would provide necessary funding and direction to reclaim Delta islands in the event of inundation to continue protection of Delta functions as an integrated resource system. Funding would be provided to ensure that a suitable amount of equipment and materials would be readily available to rapidly respond to flood fights.

### **Preliminary Assessment**

## ***Benefits***

***Ecosystem Quality***— While this alternative continues to rely on the Delta to facilitate the movement of water from the north to the south, which has negative impacts to Delta ecosystem quality, a large number of habitat restoration and protection measures have been included. This alternative would greatly improve ecosystem quality through restoration and enhancement of riverine, riparian, wetland, and terrestrial habitats. Expansion of floodway habitat, channels, and meander belts in the Bay-Delta and in upstream tributaries will help to restore fish and wildlife spawning, rearing, and feeding habitats and improve fish survival. Modified operations of the Delta export facilities would reduce the impacts of current export operations on fish survival in the Delta.

***Water Supply***— This alternative focuses on developing drought supplies only. Increasing the reliability of water supplies in other year types is not enhanced by this alternative. Delta exports would still be controlled by Bay-Delta Standards which can restrict supply availability in above normal and wet years, due to the presence of key Delta species.

***Water Quality***— Water quality would be improved through implementation of core actions. Key actions implemented to the maximum levels feasible would be to control agricultural drainage. Changes in agricultural drainage management to reduce the overall pollutant loads of the system will be preferred, including modifications to agricultural practices to reduce the discharge of pollutants.

***System Reliability***— System reliability is improved in this alternative, above the current levels. Because this alternative continues to rely on water exports in the south Delta, the level of levee protection would be increased to an appropriate level to reduce the risk of catastrophic failures that would interrupt supply availability.

## ***Constraints and Concerns***

***Non-Drought Years***— This alternative does not increase the reliability of water supplies during non-drought periods. The Delta exporters, in particular, are still vulnerable to diversion restrictions imposed by the Bay-Delta standards and endangered species.

***Entrainment***— Habitat improvements are moderate in this alternative, but the continued reliance on the south Delta export facilities will continue impacts associated with exports.

***Water Quality***— Water quality, either for the environment or for export is not significantly improved by this alternative.