

Alternative 17

Protection of Delta Islands and Functions

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Emphasis

This alternative combines key levee and channel improvements, habitat restoration, and flow barriers to achieve minimal reductions in levee system vulnerability, improvements in Delta aquatic and terrestrial habitat, and equitable water supply flexibility.

Distinguishing Features

Physical and Structural Features

Improves all Delta levees (project and non-project) to a minimum level of protection equivalent to the hazard mitigation plan (HMP) to reinforce the existing physical configuration of the system against catastrophic failure. Other important Delta infrastructure is provided with a level of flood protection equivalent to the Public Law (PL) 99 standards. A low level of habitat restoration is recommended for the Delta, Suisun Bay, and Sacramento River areas.

Operational and Management Features

Modifies upstream reservoir operations primarily for water quality purposes (diversion and release timing) and for equitable distribution of "water gains" achieved through demand reduction actions. Reclamation and conservation are emphasized, and discharge management programs are

Institutional and Policy Features

Provides incentives for groundwater banking and conjunctive use, water transfers, and the development of alternate supplies. Land retirement and fallowing achieves both demand reductions and water quality improvements.

Benefits

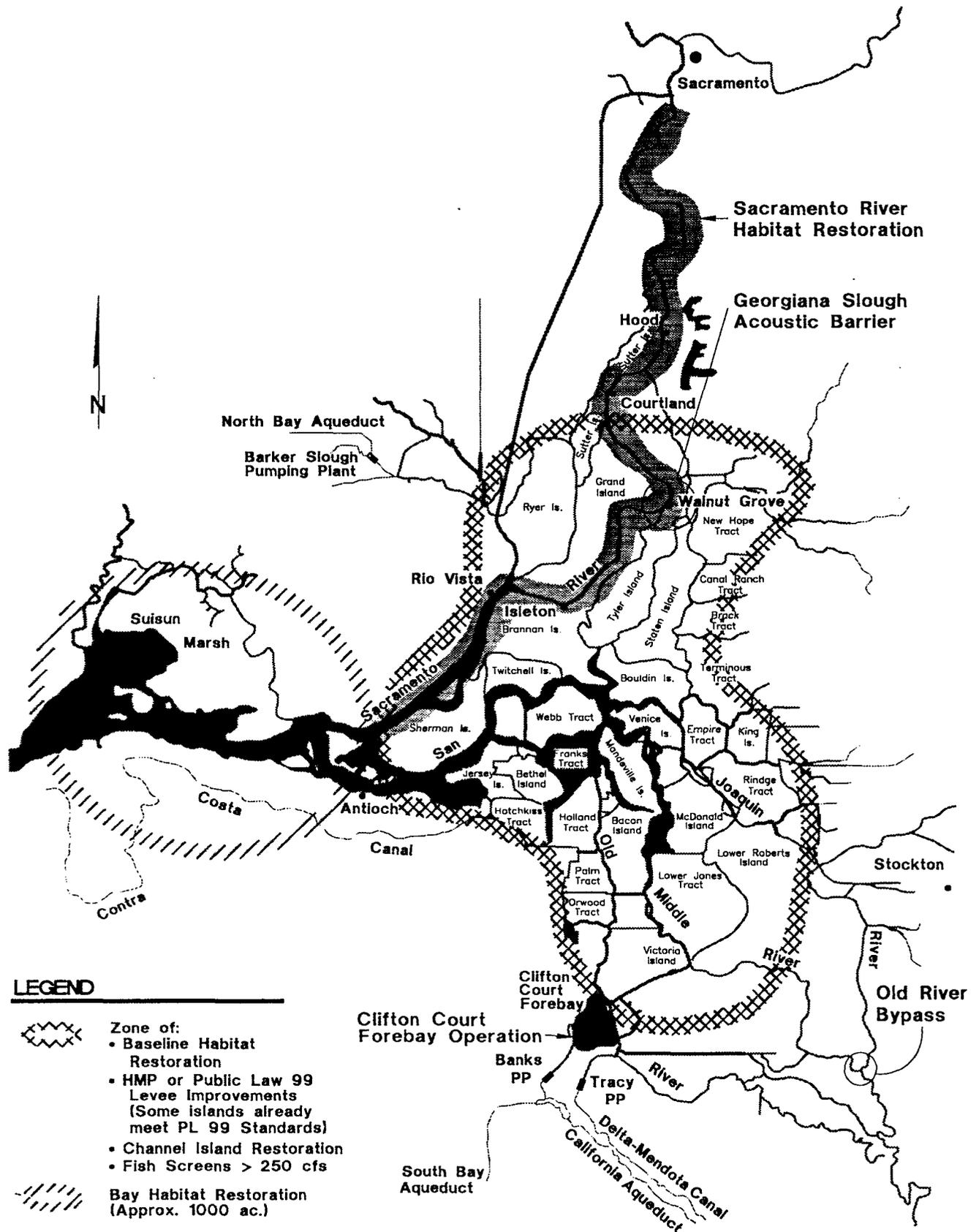
- Minimally protects Delta levees and physical configuration/land uses
- Minimally improves water quality
- Improves highest priority Delta and Sacramento River habitat
- Achieves minor water supply gains through demand reduction

Constraints and Concerns

- Minimal reduction in diversion impacts to fishes
- Mortality at South Delta export facilities remains high
- Minimal levee improvements above current conditions
- Minimal improvement of fish populations through habitat restoration
- Export capacity remains constrained

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Actions to improve system reliability, such as channel improvements and levee maintenance and stabilization, modifying agricultural practices to reduce subsidence, providing funding for maintenance and stabilization, and maintaining and/or reconstructing levees around infrastructure and habitat are implemented at minimum levels. This will reduce the risk of the Bay-Delta system, including water supply, water quality, ecosystem quality, existing land use, infrastructure, and recreational values, to catastrophic failure.

Physical and Structural Features

Flood Protection Level— This action provides a minimum 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 (Note: approximately 50 Delta islands may already meet the HMP standard). 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 Islands), islands with important regional infrastructure (e.g. the Mokelumne Aqueduct, transmission lines, Highway 160, etc.); and 2) islands with both valuable habitat and infrastructure (such as New Hope Tract, Bouldin Island, Island, Palm Tract, Lower and Upper Jones Tracts, and Lower Roberts Islands). Some Delta islands such as Sargent Barnhart and Bishop Tract are already at a standard higher than HMP but may or may not meet P-99 Standards.

Channel Improvements and Levee Maintenance— A minimal 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.

Install Barriers— Construct barriers to better manage water movement in the Delta, minimize reverse flows and salinity intrusion, and facilitate fish migration into and out of the Delta. Potential fish barrier locations include the Delta Cross Channel, Georgiana Slough, and Threemile Slough. Construct tide gates and/or flow barriers in the southern Delta to better manage south Delta water quality. Operation of the fish barriers would be coordinated with real time monitoring of anadromous fish population and movement.

Delta Levee Habitat Restoration— Restore approximately 100 levee miles of shallow water, riverine and riparian habitat in the Delta to provide forage and cover habitat for resident and anadromous fish, and to provide other benefits associated with riparian habitat. Actions might include setback levees, creation of berms, creation of shallow water habitat, and increased vegetation on levees in coordination with efforts to improve flood protection. Considerations for site selection will include distance from hazards such as pumping plants, protection from waves generated by wind and boat wakes, importance of island integrity to the maintenance of Delta water quality, and need to improve channel capacity and structural stability of levees. Good candidate areas Twitchell Island along Three Mile Slough and Seven Mile Slough, Georgiana Slough, and the north and south forks of the Mokelumne River.

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. The restoration of riverine, riparian, wetland, and adjacent terrestrial habitat and expansion of floodway habitat channels and meander belts in the Bay-Delta and upstream in rivers and tributaries to restore fish spawning, rearing, and feeding habitats and improve fish survival are implemented at minimum levels at sites having the greatest potential for achieving habitat improvements. Candidate areas include Prospect Island, Liberty Island, Little Holland Tract, Hastings Tract, Yolo Bypass, and the southeast Delta. Also restore shallow water shoreline habitat along margins of the lower Sacramento and San Joaquin River channels, and tributary sloughs including 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 such as Decker Islands.

Bay Habitat Restoration— Restore about 1,000 acres of tidal wetlands between Collinsville and Carquinez Strait. Actions may include conversion of diked wetlands to tidal wetlands or the 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.

Other Programs— Implement recommended habitat restoration actions from other programs, including the Central Valley Project Improvement Act (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.

Fish Screens— Install fish screens on diversions over 250 cubic feet per second (cfs) that are on fish migration routes in the Delta, rivers, and tributaries.

Sacramento River Habitat Restoration— 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.

Operational and Management Features

Modify Timing of Releases— Using real time monitoring and adaptive management to manage upstream reservoir releases both seasonally and annually to improve Delta water quality through dilution of land- and activity-derived contaminants, and ocean salinity repulsion. Implementation is at a higher level than the core actions reflect. Modify Sacramento and San Joaquin Valley and export area reservoir releases and groundwater storage releases in conjunction with upstream operations to accommodate system demands. Focus the timing of releases on water quality improvements while also providing (to a lesser degree of emphasis) instream aquatic habitat benefits such as improved temperature levels and optimal flows. Modify operations in coordination with other water quality and water supply actions so that benefits gained from additional groundwater storage are equitably distributed across ecosystem quality, water supply, and water quality objectives.

Modify Timing of Diversions— To improve Delta water quality, manage the timing of Delta diversions to increase Delta channel flows during poor water quality conditions. Increase export capacities and/or rates when and where flows are not needed for water quality improvements (such as during surplus flow conditions in wet winters).

Reclamation, and Alternative Supply Development— Reclamation and other cost-effective management of urban and industrial discharges and runoff are implemented at higher than minimum core levels to improve Delta water quality. The development of alternative sources of water supply for export areas would minimally improve the reliability of the Delta as a source of export water supply. Develop alternative water supplies such as desalination and potable reuse for export areas to provide current dry year needs. Coordinate these actions with conservation and reclamation actions to ensure that long-term water management flexibility gains are not lost to concurrent increase in future demands.

Conservation— Conservation and water pricing are implemented at moderate levels to reduce water demand and improve the reliability of the Delta as a source of export water supply. Residential, industrial, and agricultural conservation in and upstream of the Delta are emphasized in water management planning to increase Delta inflows as needed to meet delivery and environmental obligations. Measures capable of achieving an equivalent, equitable level of demand reduction are implemented in export areas to improve the reliability of the Delta as a source of export water supply.

Improve Pollutant Source Controls— These actions would provide for an array of increased source reduction activities, such as additional regulation of agricultural and urban drainage and better enforcement, establishing BMP's for a range of activities affecting Delta water quality such as levee maintenance and pest control practices, and supporting and enhancing existing land retirement and fallowing programs.

Apply core level actions such as implementing source control regulations for pollutants, levee maintenance best management practices to encourage use of materials compatible with good water quality, retirement of lands with serious drainage disposal problems, retirement or fallowing agricultural lands with salt or other contaminant drainage problems to reduce land-derived salt contamination, management of irrigation tailwater, retention and management of stormwater runoff, and management of discharges from abandoned mining sites to improve water quality management.

Implement on-site mine drainage remediation measures based on requirements in current regulations. Provide regulatory incentives and develop institutional agreements to enable the focusing of funding resources on priority sources. Through changes in water pollution requirements give urban areas flexibility to fund high-priority mine cleanup in lieu of increasing expenditures on treatment plant improvements.

Manage Irrigation Tailwater to Reduce Pesticides— Utilize wetlands, treatment processes, or holding reservoirs to store or retard surface agricultural drainage, reduce pesticide concentrations, and/or make releases during higher instream flow periods.

Retain and Manage Stormwater Runoff— Utilize wetlands, treatment processes, or holding reservoirs to reduce contaminant concentrations and to store or retard contaminated flows and stormwater drainage for release during periods of higher instream flows.

Institutional and Policy Features

Groundwater Banking and Conjunctive Use— Incentives for conjunctive use are implemented at higher levels than minimum core level to enhance available water supplies. Increase support of efforts to provide economically attractive opportunities for groundwater banking and conjunctive use during drier water years.

Land Retirement and Fallowing— Implement retirement of marginal agricultural lands and other irrigated lands from willing sellers at minimal levels. Fallow enough land during drought periods to equitably reduce current deficiencies while maintaining ecosystem quality at acceptable levels. Land retirement and fallowing of lands adjacent to levees can control subsidence and is potentially available to replace habitat lost due to levee maintenance and stabilization actions. Land retirement and fallowing in the Delta can also reduce the organic content of Delta water used for export purposes or provide islands for conversion to storage.

Water Transfers— Water transfers are implemented at higher levels than minimum to increase water supply predictability. Facilitate additional water marketing during drier water year to increase the efficient utilization of existing water supplies.

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 25 and 50 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— This alternative would improve ecosystem quality through a minimum level of habitat restoration and offers increased protection from catastrophic failure to existing habitat. Land retirement and fallowing in the Delta, accompanied by active management of such retired lands for wildlife (e.g. seasonal wetlands) could provide areas for habitat restoration and could contribute to improved water quality.

Water Supply— This alternative improves water supply reliability by reducing reliance on the Delta as a source of water supply through demand reductions and development of alternative sources of supply. Delta water supply reliability is also improved through channel improvements and levee maintenance and stabilization actions and in particular from salinity intrusion by elevated levels of protection of critical western Delta islands.

Water Quality— Water quality is improved through reclamation of agricultural, municipal, and industrial wastewater. Land retirement and fallowing in the Sacramento and/or San Joaquin Valleys, or in other irrigated areas dependent on Delta waters could lead to overall improvements in Delta water quality by reducing the areal extent of agricultural lands (and applied agricultural chemicals) contributing nonpoint and point discharges resulting from agricultural use. Other water quality improvements are achieved by supporting and core actions including mine drainage remediation. Water quality is addressed by improving flood protection and seismic resistance of levees on the critical western Delta islands such as Sherman, Jersey and Bradford.

System Reliability— The vulnerability of Delta functions (including land use, Delta water quality and supply, export water quality and supply, recreational values, and Delta ecosystem functions) to catastrophic failure is reduced by providing a minimum level of flood protection for all Delta islands. These efforts

reduce the vulnerability of islands with infrastructure and valuable existing habitat. Flood protection improvements of the levees around the critical western islands increases protection of those islands as well as protecting in-Delta and export water supplies from salinity intrusion due to island failure.

Continued protection of Delta functions as an integrated resource system is accomplished by an emergency levee management plan to provide necessary funding and direction to reclaim Delta islands in the event of inundation. These actions could be accomplished through expansion and continuation of existing programs such as the Delta Flood Protection Act of 1988 (SB 34) as well as sufficient funding of these efforts in the future. The minimum levels of protection for Delta islands will require development and funding of an emergency levee management plan to reclaim Delta islands, an emergency water supply plan to meet needs due to outages, and an emergency water quality plan to address intrusion of salinity due to catastrophic failure of Delta islands.

Constraints and Concerns

Ecosystem Quality— Ecosystem quality improvements do not include actions to reduce the impacts of diversions on anadromous and resident fishes, and only minimal upland habitat improvements are recommended. No integrated habitat management strategies, upstream habitat improvements, fish hatchery or harvest operations improvements are included. The selection of high priority and highly feasible sites may result in disjointed habitat throughout the Bay-Delta system.

Water Supply— Water supply may only be minimally improved. Water supply actions do not include on-stream storage expansions or new construction, or the relocation and/or consolidation of diversions. Institutional actions and the establishment of an export capacity market are implemented only at the core level.

Fisheries— Though improvements to habitat and fish survival will benefit ecosystem quality, complete restoration of important fish populations may not be possible without reducing the use of the Delta as a water supply conduit and greatly reducing exports from the south Delta. Mortality in South Delta export facilities remains significant.

Exports— Export supplies remain highly constrained to interruption while export water quality remains problematic.

Transfers— Water transfer opportunities remain highly constrained because the Delta configuration is unchanged.

Solution Principles— Ecosystem and vulnerability improvements without commensurate water supply benefits may violate principles.