

PURPOSE AND NEED

The overall purpose and mission of the CALFED Bay-Delta Program (Program) is to develop and implement a long-term comprehensive plan for ecosystem protection and restoration, and improved water management for beneficial uses of the Bay-Delta system. More specifically, the purposes of the Program are to: a) improve and increase aquatic and terrestrial habitats and improve ecological functions in the Bay-Delta system to support sustainable populations of the fish and wildlife species relying on the Bay-Delta system water; b) provide water of satisfactory quality for all beneficial uses of Bay-Delta system water; c) minimize conflict among beneficial uses of Bay-Delta system water and reduce the mismatch between Bay-Delta system water supplies and current and projected beneficial uses of the Bay-Delta system for both the short and long-term planning horizons; and d) reduce the risk to land uses and associated economic activities, water supply, infrastructure, and the ecosystem from the gradual deterioration or catastrophic failure of Bay-Delta system levees. **Specific goals and objectives have been adopted for the program and are incorporated by reference herein.**

These purposes respond to needs identified in the Framework Agreement to address the inextricably intertwined problems affecting the Bay-Delta system's public values. These values include protection of the Bay-Delta system and its fish and wildlife resources, water quality, water supply and reliability, and stabilization of Delta levees and channels. While these problems are interdependent and interrelated, the following problem discussions do not focus on the linkages.

*OK
Framework*

The Bay-Delta system no longer provides a diversity of habitats or the habitat quality necessary to maintain ecological functions and support healthy populations and communities of plants and animals. The health of the Bay-Delta system has declined as a result of degradation and loss of habitat that supports various life stages of aquatic and terrestrial biota. **One purpose of the program is to arrest and reverse the decline in the system's ecological functions, by recreating lost habitat, reducing anthropogenic system disturbances and increase water supplies to the environment in critical periods while providing for other beneficial uses of the system.**

*Elaboration
of purpose*

The steady decline in habitat quantity, quality, and diversity results from many activities both in the Bay-Delta system and areas upstream. The earliest major damaging event was the unrestricted use of hydraulic mining in the river drainage along the eastern edge of the Central Valley. Habitats in Central Valley streams were degraded as channel beds and shallow areas filled with sediment. In addition, the reduced capacity of the sediment-filled channels resulted in an increase in the frequency and extent of periodic flooding. This accelerated the need for flood control measures to protect adjacent agricultural lands. Levee construction to protect these lands eliminated fish access to shallow overflow areas, and dredging to construct levees eliminated tule bed habitat along the river channels. Since the 1850's, 700,000 acres of overflow and seasonally

inundated lands in the Bay-Delta system have been converted for use in agriculture and urban development. Many of the remaining stream sections have been dredged or channelized to improve navigation and to increase stream conveyance capacity to accommodate flood flows and facilitate water export.

Upstream water development, such as the Central Valley Project and State Water Project, depletion of natural flows, and the export of water from the Bay-Delta system, have changed seasonal patterns of inflow, reduced annual outflow, and diminished the natural variability of flows into and through the Bay-Delta system. Facilities constructed to support water diversions (e.g., Delta Cross channel and Clifton Court Forebay) cause straying or direct losses of fish (e.g., through unscreened diversions) and increase exposure of juvenile fish to predation. Entrainment and removal of substantial quantities of food-web organisms, eggs, larvae, and young fish further exacerbate the impacts resulting from overall habitat decline.

Habitat alteration and water diversions are not the only factors that have caused ecosystem problems. Water-quality degradation caused by pollutants **such as pesticides** and increased concentrations of substances, such as selenium, **may also** have contributed to the overall decline in the health and productivity of the Bay-Delta system. In addition, **undesirable** introduced species **may** compete for available space and food supplies, sometimes to the detriment of native species or economically important introduced species. *most always*

The Bay-Delta system provides the water supply for a wide range of in stream, riparian, and other beneficial water uses. While some beneficial water uses depend on the Bay-Delta system for a portion other water needs, others are, or have become, highly or totally dependent on Bay-Delta water supplies. As water use and competition among uses has increased during the past several decades, conflicts have increased among users of Bay-Delta water. Heightened competition for the water during certain seasons or during water-short years magnify the conflicts.

Water flow and timing requirements have been established for certain fish and wildlife species with critical life stages dependent on freshwater flows. These requirements have reduced flexibility to meet the quantity and timing of water delivered from the Bay-Delta system and **reduced historically available supplies for consumptive uses**. Water suppliers and users are concerned that additional restrictions, ~~if needed to protect species~~, could increase the uncertainty and further reduce the availability of Bay-Delta system water for agricultural and urban purposes. A purpose of the program is to restore a portion of supply and improve reliability through ecosystem improvement, management of high flow runoff, control of pollutants in source water and reduction in fishery entrainment impacts. These efforts are also intended to improve the ability for water providers to meet a portion of their increasing needs from the Delta. Actions are intended to enhance the ability to share water supplies through transfers and to improve the ability to pursue water recycling and groundwater conjunctive use in the areas of demand. *reliability or adequacy elaborate*

Delta levees and channels may fail because of decreasing levee stability, earthquakes, sea

level rise, or overtopping during floods. Such failures in the system could result in interruptions in the quality and availability of water for beneficial uses in the Delta or water transport across the Bay-Delta system for out of Delta use.

Good quality water is required to maintain the high-quality habitat needed in the Bay-Delta system to support a diversity of fish and wildlife populations. In addition, the Bay-Delta system is a source of drinking water for millions of Californians, ~~and is critical to the state's agricultural sector.~~ **Increasingly stringent federal drinking water requirements are forcing investments in new treatment technology and are spurring the need for water providers to seek higher quality source waters and address pollution in source waters.** Pollutants enter the Bay-Delta system through a variety of sources including sewage treatment plants, industrial facilities, forests, farm fields, mines, residential landscaping, urban streets, and natural sources.

The pollutants, pathogens, ~~natural~~ organics, and salts in the Bay-Delta system waters affect, in varying degrees, existing fish and wildlife, as well as human and agricultural use of these waters. The salts entering the Bay-Delta system from the ocean and from agricultural returns upstream decrease the utility of Bay-Delta system waters for many purposes including the ecosystem, agriculture, and drinking water. The level of ~~natural~~ organics in the water (resulting ~~primarily from the natural process of plant decay on many of the~~ **from agricultural operations - saturation and drainage of Delta peat soil islands**) is of concern because of the way ~~natural~~ organics react with ~~other chemicals~~ **disinfection chemicals commonly used to meet public health requirements in water treatment.** Sewage treatment and ~~natural and agricultural~~ **and urban runoff also contribute to organic load.** ~~during the drinking water treatment process.~~ During this treatment process, certain ~~disinfection by-products are created that may produce carcinogenic potentially adverse effects on humans health.~~ **The amount of organic material in Delta waters increases by about 200% as it crosses from the Sacramento river toward export and other diversion facilities.** Seawater intruding from the San Francisco contains bromide which when interacting with disinfection chemicals can produce bromate, a particularly powerful carcinogen. Protection of public health via water treatment has become an increasingly difficult and expensive proposition as complex interactions between organics and bromide, in addition to pathogens such as crypto sporidium and giardia, must be managed. The more contaminated the source waters, the more difficult, expensive and uncertain it is that increasingly stringent drinking water quality requirements can be met. **This program will provide opportunity for higher source water quality for drinking water purposes in conjunction with ecosystem improvement and other needs.**

Levees were first constructed in the Sacramento-San Joaquin Delta during the late 1800s when settlers began to turn tidal marshes into agricultural land. Over time, both natural setting of levees and shallow subsidence of Delta island soils resulted in a need to increase levee heights to maintain protection. There is a concern that this increased height, coupled with poor levee construction and inadequate maintenance, makes Delta levees vulnerable to failure, especially during earthquakes or floods. Failure of Delta levees can result in flooding of Delta farmland and wildlife habitat. If a flooded island is not repaired and drained, the resulting large body of

open water can expose adjacent islands to increased wave action and possible levee erosion. Levee failure on specific islands can have impacts on water supply ~~distribution~~ **transmission** systems such as the Mokelumne Aqueduct. Similarly, levee failure on key Delta islands can draw salty water up into the Delta, as water from downstream rushes to fill the breached island. This would be of particular concern in ~~low-water~~ **low-runoff** years when less fresh water would be available to repel the incoming salt water. Such a failure could result in an interruption of water supply for both urban and agricultural users and degradation of water quality and aquatic habitats. **An objective of the program is to reduce threats posed by unstable levees.** — *elaborate on p. 10*

The complex array of agencies with planning, regulatory and/or permitting authorities over levees makes rehabilitation and maintenance efforts difficult. Regulatory measures that protect endangered species and critical habitat sometimes conflict with and prolong levee rehabilitation and maintenance work.