SACRAMENTO SAN JOAQUIN RIVER DELTA
CHANNEL RESTORATION & MAINTENANCE

Representatives of the above-identified federal agencies, state agencies, local agencies and non-governmental entities are interested in exploring a ***Delta Channel Restoration/Maintenance Program****.*

Problem Statement

Channels of the Sacramento-San Joaquin Delta, particularly those in the southern Delta, suffer from diminished capacity due to siltation. The siltation impacts:

- Net flow in the channels (reduced)
- Water temperature (increased)
- Dissolved oxygen (reduced)
- Salinity ("hot spot" buildup)
- Concentration of constituents of concern (increased)
- Toxic algae blooms (increased)
- Navigation (impeded)
- Flood response and levee maintenance (compromised)
- Invasive species (expanded)

Proposed Action

Through a transparent, inclusive, and collaborative process, develop and implement a comprehensive, long-term program to remove excess silt buildup from Delta channels, initially targeting those in the southern Delta. The program would identify the scope of the problem, criteria for silt removal operations

(dredging), and mitigation measures. The objectives would be to: (1) engage permit agencies early and secure all necessary permits, (2) establish an adequate and consistent source of funding, (3) reestablish adequate channel depths, and (4) provide for regular dredging that removes accumulating sediment to improve conditions for beneficial uses and the health of the Bay-Delta estuary.

Background Information

Impacts Generally: Siltation in the Delta channels has occurred and, left unaddressed, will choke more of the waterways with more severe consequences. The buildup of silt fundamentally alters the hydrodynamics of Delta channels to the detriment of all beneficial uses. As sediment accumulates, the amount of flow which can travel in and through the channels decreases. With decreased channel capacity, incoming flows (whether from riverine or tidal action) encounter greater resistance; thus, only diminished and restricted flows pass into and through the channels, impairing all beneficial uses and the overall health of the Bay-Delta estuary.

Aquatic Weeds: Current conditions in some occluded Delta channels are precluding many functions like conveyance, recreation, and transportation because of a combination of reduced channel depths and aquatic invasive weeds. Further, sediment deposition makes many channels shallower, shifting the invasive aquatic weed composition from floating aquatic vegetation (FAV) like water hyacinth to submerged aquatic weeds (SAV) like *egeria densa*. Although both SAV and FAV flourish in the nutrient rich Delta waters, FAV is both easier to remove and mechanical removal techniques can be employed. The use of mechanical removals for FAV eliminates the associated dissolved oxygen demand from the decomposition of dead biomass that settles to the channel bottom after treatment with herbicide. As invasive aquatic weeds proliferate the channel function impacts beneficial uses. Although the State Parks Division of Boating & Waterways mounts a permit-limited aquatic weed management program, channel occlusion inhibits access and with shallow channels allowing the proliferation of stubborn rooted SAV like *egeria densa* management of these invasive aquatic weeds becomes much more challenging. With restored channel depths management of invasive aquatic weeds would be more attainable and alternative methods to remove FAV including mobile mechanical harvesting and possibly fixed mechanical harvesting facilities may be possible with a greater proportion of FAV than SAV and better channel flows to allow downstream movement of FAV.

Ecosystem Impacts: Shallower channels constrict flow for habitat, increase temperatures and decrease dissolved oxygen in the water, all of which adversely affect fish and other water-dependent species. Reduced channel capacities also decrease assimilation and dilution of pollutants, such as salts and metals, and encourage the growth of harmful algae blooms.

Navigation Impacts: Reduced depth and increased aquatic weeds significantly reduce accessibility of Delta channels for commerce, recreation, emergency response, and marine construction, including water-based levee repairs.

Water Supply Impacts: For in-Delta water users, shallow channels impede diversions due to pumps' and siphons' inability to divert water without adequate depth. The silt deposition is not uniform so the siltation process can create mounds or channel features that block water from reaching areas that otherwise would have sufficient water elevation for agricultural diversion. Also, because of the effect on hydrodynamics,

water levels, and quality, the excess silt buildup generates avoidable and unnecessary friction among regulators, recreational interests, in-Delta water users, and the operators of the CVP and SWP, both of which depend on Delta channels to convey water for use in areas south of the Delta.

High Flow Events: Very high flows entering the Delta might have formerly been expected to flush accumulated sediment out of the area and improve channel capacity. This is no longer the case; recent high flows, like those that occurred in 2017 and 2019, actually increased sediment buildup in many South Delta channels. The fast-moving flows on the rivers bring heavy sediment loads which then settle out in the meandering and slow-moving Delta channels. Thus, the adverse effects of the diminished channel capacity are increasing, and high flow events contribute to, rather than solve, the problem.

Potential Uses of Dredge Material: Although dredge material is expected to improve levees by depositing the material on the land side of levees to form stability berms, other uses, such as supporting Delta restoration projects should be explored.