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The Resources Agency
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BIOLOGICAL ASSESSMENT FOR SOUTH DELTA TEMPORARY BARRIERS PROJECT

Biological Assessment for
USFWS Section 7 Endangered Species Permit

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resilience and adaptation to the new sites (McCarten 1991; Golden and Fiedler 1991).

A recent review of Mason's lilaeopsis mitigation efforts resulted in the following recommendation to the CDFG endangered plants program: (1) any arbitrary monitoring program that does not contain at least one normal precipitation year should not be viewed with confidence, and (2) care must be taken to ensure that populations can be transplanted successfully before extant populations are destroyed (Golden and Fiedler 1991). It is not known whether creation of habitat via transplanted populations is beneficial to long-term survival of this species. These factors will be considered if mitigation is needed due to project impacts on this rare plant.

California Hibiscus, *Hibiscus californicus*

Hibiscus californicus (Kellogg) is a member of the Malvaceae (mallow family). This stout, canelike herb is shrublike in appearance. The plant produces one to several stems from its coarse perennial root, and leaves are heart-shaped. In late summer it produces large, white flowers with red centers. Stamens are combined into an elongated central shaft. Habitat includes riverbanks and freshwater marsh, and the range extends from Butte Creek, Butte County, to San Joaquin County and the Delta. In the Delta it is confined to freshwater marsh habitat on remnant berm islands. Its range has been diminished by channelization and draining of wetlands. Increases in channel water salinity may also pose a threat to this freshwater species. Competition from an invasive exotic iris (*Iris pseudacorus*) may displace hibiscus. The scarcity of remaining habitat has prompted Category 2 federal candidate species status for this plant.

California hibiscus is present throughout the project area. The species is most common on Middle River islands and is also found on Woodward Canal, West Canal, Old River near Coney Island, and Grant Line Canal (Figure 30). Surveys for the Delta Wetlands Project found an additional six populations around Bacon Island (Dains 1988). Fall 1991 surveys located three populations of hibiscus on the islands in Grant Line Canal (Figure 31). Associated species at these sites included *Iris pseudacorus, Pl mites communis, Rubus vitifolius, Salix* sp., *cus effusus, Scirpus acutus,* and *Typha* Specific field observations are recorde Table 9. No populations of hibiscus have observed on Old River within the Temp Barriers project area.

The Middle River near Victoria Canal barrie been installed seasonally since 1987. A 5 monitoring program was initiated in 19 monitor ten impacted populations of *Hib californicus* and three control populations d stream of the barrier. Data collected twice a include number of plants, height of stems, ber of capsules per plant, number of seed capsule, and seed width. The measurement intended to quantify project impacts on survival, vigor, and fecundity.

To date, these data show species survival w the barrier area of influence, although a populations were not relocated after the pr ject surveys (Lacey 1990). For most popula the number of plants has remained the from 1987 to 1990, although some new y plants have appeared at three sites. Av stem height has remained constant, and nu of stems and number of capsules per plant remained the same or increased. In ger populations in the zone of influence have f as well as or better than control popula downstream of the barrier. Some variabilit been observed, but drought impacts and environmental variables may have added t variability (Lacey, pers comm 1991). A few lations have been adversely impacted by gra which is not a result of project operations sults of 1991 monitoring are still being anal and a 5-year summary of the program is in gress.

Three small populations of California hib have been identified on the mid-channel isl in Grant Line Canal. Field measuren of population size and height are record Table 9. These populations were discovered ing late November 1991, when the plants fully senescent. The plants were readily vi from the channel due to their distinctive gr form, but additional surveys will be conduct spring 1992 to ensure complete coverage.

Increases in duration of the high-water elevation due to project operations on Old River and Grant Line Canal should be comparable to tidal cycle changes that have occurred in Middle River. No significant effects on hibiscus have been seen on Middle River, and the barriers are not expected to have an adverse impact on California hibiscus along Grant Line Canal. The vegetation monitoring component of this proposal includes a program to track the pre- and post-project condition of these populations if the Grant Line Canal barrier is installed. If adverse impacts are detected, remedial action and/or mitigation will be implemented.

Increases in channel velocity could increase potentially damaging channel erosion and negatively impact California hibiscus. Modeling studies have shown that channel velocities should decrease upstream of the barriers. Therefore, a negative impact of this type is not expected.

Two locations have been proposed for the Grant Line Canal barrier. Location of the barrier 0.25 mile east of Old River should have no direct construction impacts on known hibiscus populations. A second location has been proposed about 0.45 mile east of Old River. The hibiscus population closest to the proposed barrier sites is about 0.75 mile east of Old River. Locations of these rare plants should be considered when siting the barrier and any associated tide stage recorders to avoid direct loss of the plants or damage from construction disturbance. These plants will be flagged prior to construction activities to avoid direct impacts.

Delta Tule Pea, *Lathyrus jepsonii* Greene ssp. *jepsonii*

Lathyrus jepsonii Greene ssp. *jepsonii* is a member of the Leguminosae (Fabaceae - pea family). This glabrous perennial herb entwines in tangled masses among *Scirpus* sp. stands in tidal marshes. The plants are mostly 10-25 dm tall, suberect to scandent, with winged stems and 10-14 leaflets. Flowers are pink to lavender, and pods are 5-9 cm long. Bloom is typically in May and June, but flowers have been observed from April to November. Its preference for wetland sites separates it from its closest relative, *Lathyrus jepsonii* ssp. *californicus*, which prefers a drier setting and has puberulent to pubescent (slightly hairy to hairy) herbage.

Delta tule pea is found along the waterside or crest of river and canal banks in brackish and freshwater marshes and riparian woodlands on drier ground at or above the zone of tidal influence. Historical distribution included San Francisco Bay and Delta estuary wetlands and populations in San Benito, Fresno, and Tulare counties. It may have occurred throughout the Central Valley wetlands. Because of widespread habitat loss from filling and diking of wetlands, its current range is restricted to tidal marshes bordering San Pablo Bay, Suisun Marsh, Suisun Bay, and the Delta. Delta tule pea is a federal Category 2 candidate species. Drainage or removal of tidal wetlands and salinity changes are endangerment factors (CNPS 1988).

Delta tule pea is present in the Temporary Barriers project area. One plant was found in November 1991 about 2.7 miles upstream of the westernmost Grant Line Canal barrier site (Figure 31), and four populations were found downstream of the Middle River barrier near Victoria Canal (ECOS 1990). These downstream populations are still present and have not been impacted by five years of operating the Middle River barrier. The plant on Grant Line Canal is high on the levee, above the high tide waterline. The maximum water elevation in the channel is not expected to increase during the project, and increases in channel water salinity are not expected. Therefore, no adverse impacts to this species are expected.

Coastal and Valley Freshwater Marsh

Coastal and Valley Freshwater Marsh, a natural wetland community, has been assigned one of the highest priority classifications by the California Natural Diversity Database. It is dominated by perennial emergent monocots. Tules, reeds, cattails, and sedges often form dense stands that grade into upland thickets of willows, buttonwillows, dogwood, and alder. Surveys of freshwater marshes in the Delta revealed at least 57 wildlife species associated with this habitat type (Madrone *et al* 1980). In pre-agricultural California, 4.1 to 5 million acres of wetland habitat