

**APPENDIX J**

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**Biological Species of Concern**



## APPENDIX J

### BIOLOGICAL SPECIES OF CONCERN

#### J.1 INTRODUCTION

The federal Endangered Species Act requires federal agencies, in consultation with the Secretaries of the Interior and Commerce, to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of the critical habitat of the species (50 CFR Part 402). For the purposes of this document, consultation procedures under section 7 of the Endangered Species Act may be consolidated with interagency cooperation procedures required by other statutes, such as the National Environmental Policy Act (NEPA) (50 CFR 402.6). Likewise, the California Endangered Species Act requires that each state lead agency consult with the California Department of Fish and Game to ensure that any action authorized, funded, or carried out by that state lead agency is not likely to jeopardize the continued existence of any endangered or threatened species (Fish and Game Code Section 2090).

This appendix presents information about a wide variety of special status species (i.e., listed, proposed or candidate threatened and endangered) and more common but important species of birds, fish, mammals, plants and reptiles. This information was obtained through informal consultation between federal and state resource agencies.

This appendix identifies the possible species of concern within the LTMS Planning Area. Part 1 (Section J.2) presents a list of listed, proposed, and candidate endangered and threatened species and identifies those that may occur in the LTMS Planning Area or be affected by dredging or dredged material disposal. Part 2 (Section J.3) is the outcome of informal consultations among state and federal resource agencies to define potential effects of dredging and disposal activities on certain fish species and develop possible management strategies to avoid adverse impacts. Part 3 (Section J.4) discusses threatened and endangered and other special status species.

#### J.2 PART 1: LISTING OF SPECIES (USFWS LETTER)

The U.S. Fish & Wildlife Service (USFWS) and California Department of Fish and Game (CDFG) were asked to provide a list of special status species that could potentially occur in the LTMS Planning Area or that might be affected by dredging and disposal activities. A special status species is defined as any species that is listed, is a candidate for listing, or has been recommended by a federal agency for listing as threatened or endangered under the Endangered Species Act.

The resource agencies provided a list of special status species that have been found in the 12 counties surrounding the San Francisco Estuary (see Table J-1). As discussed in Chapter 4, the Planning Area includes those areas where dredged material is likely to be used in upland areas, as well as San Francisco Bay west of Sherman Island and a corridor that stretches from the Golden Gate to the San Francisco Deep Ocean Disposal Site. While the Planning Area spans all of the 12 counties, there are many locations within each county where use of dredged material is not expected.

The LTMS agencies reviewed the list provided by USFWS to narrow the list of species to those that should be considered during site-specific environmental reviews of dredging-related facilities. This review was conducted using the CDFG's California Natural Diversity Database (CNDDB) and other reference material on the habitat and life history of species on the list. In many cases, species on the original list were found to be outside of the area where dredged material is likely to be used and/or have not been observed in the region for several decades. The results of this review are noted on the list of species shown in Table J-1. Species that are not likely to be affected by the proposed policies are noted with a "\*" in Table J-1. Site-specific evaluations should, at a minimum, include an assessment of the remaining species listed in Table J-1.



Table J-1. Species of Concern  
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Common Name	Scientific Name	Status	Comments
<b>Mammals</b>			
Alameda Island mole	<i>Scapanus latimanus parvus</i>	FC2	No occurrences in CNDDB. <i>S. latimanus</i> habitat is soft soil in valleys and mountain meadows in several biotic communities from the Lower Sonoran to the Hudsonian life zones.
*Berkeley kangaroo rat	<i>Dipodomys heermanni berkeleyensis</i>	FC2	Habitat is >50'. Found in Briones Valley and east Oakland. (PE-LS1992).
*Fringed myotis bat	<i>Myotis thysanodes</i>	FC2	Upper Sonoran life zones in open woods. Range is all along Pacific coast.
*Greater western (California) mastiff bat	<i>Eumops perotis californicus</i>	FC2	Alameda (Tracy - cliffs), San Benito, and Mariposa counties south in arid/semiarid lowlands.
*Long-eared myotis bat	<i>Myotis evotis</i>	FC2	Mostly in woods in Upper Sonoran, Transition, and Canadian life zones. Pacific coast range and Sierra Nevada.
*Long-legged (hairy-winged) myotis bat	<i>Myotis volans</i>	FC2	Open forest in upper Sonoran and Transition life zones.
*Pacific western big-eared bat	<i>Plecotus townsendii townsendii</i>	FC2	Oak woodland, pasture, grassy hillsides. Petaluma River, Marin. (PE-LS1992)
*Point Reyes jumping mouse	<i>Zapus trinotatus orarius</i>	FC2	No occurrences in CNDDB. <i>Zapus trinotatus</i> found chiefly in meadows in the forests of redwood, fir, spruce, and hemlock. Range extends south from Washington to north of San Francisco Bay.
*Point Reyes mountain beaver	<i>Aplodontia rufa phaea</i>	FC2	Riparian stream habitat with dense vegetation - Drakes Bay & Double Point (Marin).
Riparian brush rabbit	<i>Sylvilagus bachmani riparius</i>	FC1	Habitat is valley floor riparian and floodplain - only in San Joaquin and Stanislaus counties (Ripon Quad).
Salt marsh harvest mouse	<i>Reithrodontomys raviventris</i>	FE	Tidal salicornia (salt and brackish marsh) habitat; 129 occurrences.
Salt marsh vagrant shrew	<i>Sorex vagrans halicoetes</i>	FC2	Tidal salt marsh (Redwood Point, Mountain View, San Quentin, Richmond).
*San Francisco dusky-footed woodrat	<i>Neotoma fuscipes annectens</i>	FC2	No occurrences in CNDDB. <i>N. fuscipes</i> range does not include San Francisco Bay area or Central Valley, according to Ingles.
*San Joaquin pocket mouse	<i>Perognathus inoratus</i>	FC2	Grassy or weedy fine-textured soil in the Lower and Upper Sonoran life zones of the San Joaquin and Salinas valleys.
San Joaquin kit fox	<i>Vulpes macrotis mutica</i>	FE	Grazed grassland, agricultural land, valley/coastal mountain interface zone. Primarily northwest San Joaquin valley.
San Joaquin Valley (riparian) woodrat	<i>Neotoma fuscipes riparia</i>	FC1	Valley floor, riparian floodplain in San Joaquin (Corral Hollow Creek).



Table J-1. Species of Concern  
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Common Name	Scientific Name	Status	Comments
<b>Mammals (continued)</b>			
*Small-footed myotis bat	<i>Myotis ciliolabrum</i> (formerly <i>M. subulatus</i> )	FC2	Arid uplands.
Suisun ornate shrew	<i>Sorex ornatus sinuosus</i>	FC2	Grizzly Island, Mare Island, Napa, Benicia (PE-LS1987). <i>S. ornatus</i> habitat is streams and brush-covered hillsides.
*Yuma myotis bat	<i>Myotis yumanensis</i>	FC2	Chiefly open woods, suboreal zones throughout state.
<b>Birds</b>			
Alameda (South Bay) song sparrow	<i>Melospiza melodia maxillaris</i>	FC2	Salt marsh habitat.
Aleutian Canada goose	<i>Branta canadensis leucopareia</i>	FT	Wetlands, grasslands, cultivated fields.
American peregrine falcon	<i>Falco peregrinus anatum</i>	FE	High cliffs, banks, dunes, near water (Oakland airport).
Bald eagle	<i>Haliaeetus leucocephalus</i>	FT	Coast, rivers, large lakes in open areas.
*Bell's sage sparrow	<i>Amphispiza belli belli</i>	FC2	Coast of California.
Black rail	<i>Laterallus jamaicensis</i>	FC2	Salt, brackish, and freshwater marsh habitat. Pickleweed habitat.
California clapper rail	<i>Rallus longirostris obsoletus</i>	FE	Salt and brackish marshes; fresh water marshes in southwest.
California least tern	<i>Sterna antillarum</i> (= <i>ablifrons</i> ) <i>browni</i>	FE	Salt marshes and salt ponds, open flat beaches, river and lake margins, near shallow water.
California brown pelican	<i>Pelecanus occidentalis californicus</i>	FE	Open coastal habitat.
*Ferruginous hawk	<i>Buteo regalis</i>	FC2	Open country, usually prairies, plains, badlands.
*Harlequin duck	<i>Histrionicus histrionicus</i>	FC2	Coastal islets, winters along North American coasts.
*Little willow flycatcher	<i>Empidonas traillii brewsteri</i>	FC2	
*Marbled murrelet	<i>Brachyramphus marmoratus</i>	FT	Conifer forests near coast, inland lakes, coastal waters, nests inland; feeds on crustaceans and fish.
*Mountain plover	<i>Charadrius montanus</i>	FC2	
*Northern spotted owl	<i>Strix occidentalis caurina</i>	FT	Old growth forest above 200 feet.
Salt marsh common yellowthroat	<i>Geothlypis trichas sinuosa</i>	FC2	Fresh, salt, and brackish water marshes.
San Pablo (Suisun) song sparrow	<i>Melospiza melodia samuelis</i>	FC2	Marsh habitat.
Tricolored blackbird	<i>Agelaius tricolor</i>	FC2	Fresh water marshes, croplands, nest near/over water.
Western burrowing owl	<i>Athene cucularia hypugea</i>	FC2	
Western snowy plover	<i>Charadrius alexandrinus nivosus</i>	FCT	Sandy beaches on marine and estuarine shores.
White-faced ibis	<i>Plegadis chihi</i>	FC2	Marshes, swamps, ponds, rivers, mostly freshwater habitat.
<b>Reptiles</b>			
*Alameda whipsnake (striped racer)	<i>Masticophis lateralis euryxanthus</i>	PE	Oak woodlands, canyons, hillsides above 500 feet. East Oakland and Contra Costa County areas (Mt. Diablo/Las Trampas).
California horned lizard	<i>Phrynosoma coronatum frontale</i>	FC2	Grazed grassland in San Joaquin/Tracy area; 3 of 5 occurrences in San Joaquin delta area.



Table J-1. Species of Concern  
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Common Name	Scientific Name	Status	Comments
<b>Reptiles (continued)</b>			
San Francisco garter snake	<i>Thamnophis sirtalis tetrataenia</i>	FE	Mostly freshwater pond/reservoir habitat, treefrog diet, in hills of San Mateo County (CNDDDB). Also at low elevation near San Francisco Airport.
*San Joaquin whipsnake	<i>Masticophis flagellum ruddocki</i>	FC2	Zero occurrences in CNDDDB.
Giant garter snake	<i>Thamnophis gigas</i>	FT	Ten of 94 occurrences in Delta area - Jersey and Liberty islands; occurs Fresno to Sacramento.
Northwestern pond turtle	<i>Clemmys marmorata marmorata</i>	FC2	Riparian creek-sides, floodplains, estuarine environments.
*Silvery legless lizard	<i>Anniella pulchra pulchra</i>	FC2	Zero occurrences in CNDDDB.
*Southwestern pond turtle	<i>Clemmys marmorata pallida</i>	FC2	Oak woodland, riparian habitat all outside area (Southern California).
<b>Amphibians</b>			
California red-legged frog	<i>Rana aurora draytoni</i>	FC2,PE	Grazed grasslands, ponds.
California tiger salamander	<i>Ambystoma californiense</i>	FC1	Stock ponds in annual grasslands of valley-foothill hardwood habitats. Sonoma, Petaluma River area.
*Foothill yellow-legged frog	<i>Rana boylei</i>	FC2	Mostly in foothills (Austin Creek, Russian River, Rohnert Park - Sonoma; and Saint Helena - Napa County).
*Northern red-legged frog	<i>Rana aurora aurora</i>	FC2	Bog habitat in redwood forest; all 19 occurrences in Humboldt area.
*Western spadefoot toad	<i>Sacchiopus hammondi</i>	FC2	Pond habitat.
<b>Fish</b>			
Delta smelt	<i>Hypomesus transpacificus</i>	FT	
Green sturgeon	<i>Acipenser medirostris</i>	FC2	
Kern Brook lamprey	<i>Lampetra hubbsi</i>	FC2	
Longfin smelt	<i>Spirinchus thaleichthys</i>	FC2	
Pacific lamprey	<i>Lampetra tridentata</i>	FC2	
River lamprey	<i>Lampetra ayresi</i>	FC2	
Sacramento splittail	<i>Pogonichthys macrolepidotus</i>	PT	
Tidewater goby	<i>Eucylogobius newberryi</i>	FE	
Winter-run chinook salmon	<i>Oncorhynchus tshawytscha</i>	FE	
<b>Invertebrates</b>			
*Antioch cophuran robberfly	<i>Cophura hurdi</i>	FC2	One specimen known - Antioch dunes (LS-1939).
*Antioch Dunes anthicid beetle	<i>Anthicus antiochensis</i>	FC2	Antioch dunes preserve area. PE (LS-1953). No appropriate sites for rehandling or disposal facilities.
*Antioch efferian robberfly	<i>Efferia antiochi</i>	FC2	One specimen known - Antioch dunes (LS-1959).
*Antioch mutillid wasp	<i>Myrmosula pacifica</i>	FC2	One specimen known - Antioch dunes (LS-1952).



Table J-1. Species of Concern  
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Common Name	Scientific Name	Status	Comments
<b>Invertebrates (continued)</b>			
*Antioch sphecid wasp	<i>Philanthus nasalis</i>	FC2	Antioch dunes, Sacramento/San Joaquin Delta area. No appropriate sites for rehandling or disposal facilities.
*Bay checkerspot butterfly	<i>Euphydryas editha bayensis</i>	FT	Found on native grasslands, outcrops of serpentine soil - hillsides of San Mateo county and inland, east of Mount Diablo.
*Bridges' coast range shoulderband snail	<i>Helminthoglypta nickliniana bridgesi</i>	FC2	Open hillsides with tall grass/weeds in Contra Costa and Alameda counties. Found at Marsh Creek Canyon near Mount Diablo
*Bumblebee scarab beetle	<i>Lichnanthe ursina</i>	FC2	Habitat is sand dunes along outer coast.
California freshwater shrimp	<i>Syncaris pacifica</i>	FE	Fourteen occurrences - all in Napa, Sonoma, Marin counties.
*Callippe silverspot butterfly	<i>Speyeria callippe callippe</i>	PE	Hillsides on San Bruno Mountain, >200 feet.
Ciervo aegialian scarab beetle	<i>Aegialia concinna</i>	FC1	Sandy substrates (one occurrence).
Conservancy fairy shrimp	<i>Branchinecta conservatio</i>	FE	Zero occurrences in CNDDDB.
Curved-foot hygrotus diving beetle	<i>Hygrotus curvipes</i>	FC2	One occurrence in aquatic, shallow muddy pool at Oakley (east of Antioch).
Delta green ground beetle	<i>Elaphrus viridus</i>	FT	Grassland and vernal pool habitat. Two occurrences in Solano County (Dozier and Elmira Quads).
*Globose dune beetle	<i>Coelus globus</i>	FC2	Eight occurrences all in Southern California.
*Hurd's metapogon robberfly	<i>Metapogon hurdi</i>	FC2	Zero occurrences in CNDDDB.
Lange's metalmark butterfly	<i>Apodemia mormo langei</i>	FE	Antioch sand dunes.
*Leech's skyline diving beetle	<i>Hydroporous leechi</i>	FC2	Zero occurrences in CNDDDB.
*Longhorn fairy shrimp	<i>Branchinecta longiantenna</i>	FE	Freshwater pond habitat. Two of seven occurrences in Alameda & Contra Costa counties. Wind energy development threatens.
Marin elfin butterfly	<i>Incisalia mossii</i>	FC2	Not found in CNDDDB.
Middlekauf's shieldback katydid	<i>Idiostatus middlekauf</i>	FC2	One occurrence in Antioch dunes.
*Mission blue butterfly	<i>Icaricia icariodes missionensis</i>	FE	Occur on slopes and hillsides in San Mateo and San Francisco counties.
*Moestan blister beetle	<i>Lytta moesta</i>	FC2	Two occurrences - one southwest of Modesto (Westley), other Sequoia National Park.
*Molestan blister beetle	<i>Lytta molesta</i>	FC2	Seasonally found in Central Valley from Contra Costa to Kern counties; one of 11 occurrences in Brentwood.
Myrtle's silverspot butterfly	<i>Speyeria zerene myrtilae</i>	FE	Zero occurrences in CNDDDB.
Opler's longhorn moth	<i>Adella oplerella</i>	FC2	Zero occurrences in CNDDDB.
Ricksecker's water scavenger beetle	<i>Hydrochara ricksecke</i>	FC2	One of 4 occurrences in Jepson Prairie Preserve (not much known).
Sacramento anthicid beetle	<i>Anthicus sacramento</i>	FC2	Found in sand among dredge spoil.
*San Bruno elfin butterfly	<i>Incisalia mossii bayensis</i>	FE	Found on hillsides and ridgetops; San Mateo County: San Bruno Mountains, Whiting ridge.



Table J-1. Species of Concern  
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Common Name	Scientific Name	Status	Comments
<b>Invertebrates (continued)</b>			
San Francisco lacewing	<i>Nothochrysa californica</i>	FC2	Zero occurrences in CNDDDB.
San Joaquin dune beetle	<i>Coelus gracilis</i>	FC1	One of 5 occurrences in Antioch Dunes (1974) - rest in Fresno and Kings canyon.
*Sandy beach tiger beetle	<i>Cicindella hirticollis gravida</i>	FC2	All of 23 occurrences in Southern California (San Diego/Los Angeles).
Sonoma arctic skipper	<i>Carterocephalus palaemon</i> ssp.	FC2	Zero occurrences in CNDDDB.
*Valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>	FT	Riparian habitat, mostly higher elevations. Of 124 occurrences, several in Yolo and San Joaquin counties.
*Vernal pool fairy shrimp	<i>Branchinecta lynchi</i>	FT	Vernal pool habitat - upland. Twelve occurrences - Madera to Sacramento counties.
Vernal pool tadpole shrimp	<i>Lepidurus packardii</i>	FE	One of 4 occurrences at Kesterson, confluence of Salt Slough and San Joaquin River.
<b>Plants</b>			
Antioch Dunes evening-primrose	<i>Oenothera deltoides</i> ssp. <i>howellii</i>	FE	Grassy dune habitat. Found at Antioch Dunes and Jersey Island (8 occurrences).
*Baker's manzanita	<i>Arctostaphylos bakeri</i> ssp. <i>bakeri</i>	FR2	Serpentine, chaparral habitat (Camp Meeker, Sonoma) (8 occurrences).
Baker's stickysced (Sonoma sunshine)	<i>Blennosperma bakeri</i>	FE	Vernal pools and swales. Excellent site near Sears Point (others southwest of Santa Rosa, Sebastapol).
*Brewer's dwarf-flax (western-flax)	<i>Hesperolinon breweri</i>	FC2	Chaparral, foothill grasslands, often rocky serpentine soil (near Antioch).
California sea blite	<i>Suaeda californica</i>	FE	Salt flats and marsh habitat (upper littoral). Two of 10 occurrences: Yacht harbor-Palo Alto, west of Albany.
Carquinez goldenbush	<i>Isocoma arguta</i>	FC2	Habitat is low benches adjacent to seasonal drainage (5 occurrences). Found in Montezuma Wetlands/Bird Island area.
Colusa grass	<i>Neostapfia colusana</i>	PT	Alkaline saline playa, vernal pool habitat - several of 22 occurrences near Olcott Lake, Jepson Prairie Preserve & Davis area.
Contra Costa goldfields	<i>Lasthenia conjugens</i>	PE	Vernal pools in open grassy areas, seasonal wetlands habitat. Found at Grizzly Island, Solano County.
Contra Costa wallflower	<i>Erysimum capitatum</i> ssp. <i>angustatum</i>	FE	Not in CNDDDB.
*Crystal Springs lessingia	<i>Lessingia arachnoidea</i>	FC2	Zero occurrences in CNDDDB.
*Diablo rock-rose	<i>Helianthella castanea</i>	FC2	Upland forest, chaparral. Hillsides of Oakland, San Francisco, Mount Diablo (300-700 feet) (15 occurrences).
Ferris's milk-vetch	<i>Astragalus tener</i> var. <i>ferrisiae</i>	FC2	One of 10 occurrences in vernal meadow southeast of Dixon (rest Northern California).



Table J-1. Species of Concern  
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Common Name	Scientific Name	Status	Comments
Plants (continued)			
(?)Gairdner's yampah	<i>Perideridia gairdneri</i> ssp. <i>gairdneri</i>	FC2	Zero occurrences in CNDDDB.
*Hickman's cinquefoil	<i>Potentilla hickmanii</i>	PE	Ocean bluff habitat (1 of 3 sites Half Moon Bay - rest Monterey).
Hoover's button-celery	<i>Eryngium aristulatum</i> var. <i>hooveri</i>	FC1	Zero occurrences in CNDDDB.
*Kellogg's (wedge-leaved) horkelia	<i>Horkelia cuneata</i> ssp. <i>sericea</i>	FC2	Coniferous forests, coastal scrub.
*Marin checkermallow	<i>Sidalcea hickmanii</i> ssp. <i>viridis</i>	FC2	Zero occurrences in CNDDDB.
*Marin dwarf-flax (western-flax)	<i>Hesperolinon congestum</i>	FT,PE	Grassy serpentine slopes of Marin, Petaluma River, Crystal Springs Road, San Mateo; Presidio, San Francisco; found at elevations > 140 feet.
Marin knotweed	<i>Polygonum marinense</i>	FC2	Napa River, Cuttings Wharf.
Mason's lilaeopsis	<i>Lilaeopsis masonii</i>	FC2	Fresh, brackish, and salt water marsh vegetation in littoral zone with strong tidal influence. Mare Island is saltiest location, also found along Napa River (south of Rotto Landing).
*Mission Delores campion	<i>Silene verecunda</i> ssp. <i>verecunda</i>	FC2	Hillsides and dunes greater than 100 feet in elevation, San Francisco location.
*Montara manzanita	<i>Arctostaphylos montaraensis</i>	FC2	Coastal scrub (> 100 feet), San Bruno Mountain and Montara Mountain.
Mount Diablo bird's beak	<i>Cordylanthus nidularius</i>	FC1	Not in CNDDDB.
*Mount Diablo jewelflower	<i>Streptanthus hispidus</i>	FC2	Hillsides on Mount Diablo.
*Mount Diablo phacelia	<i>Phacelia phacelioides</i>	FC2	Rocky, serpentine slopes on Mount Diablo.
*Mount Tamalpais thistle	<i>Cirsium hydrophilum</i> var. <i>vasevi</i>	FC2	Hillsides of Mount Tamalpais.
*Northern California black walnut	<i>Juglans californica</i> var. <i>hindsii</i>	FC2	Riparian forests, riparian woodlands.
*Point Reyes horkelia	<i>Horkelia marinensis</i>	FC2	Located on Point Reyes peninsula (> 40 feet).
*Presidio clarkia	<i>Clarkia franciscana</i>	FE	Coastal scrub/grasslands in Presidio, San Francisco and Oakland hills (> 75 feet in elevation).
*Presidio manzanita	<i>Arctostaphylos hookeri</i> ssp. <i>ravenii</i>	FE	Serpentine slopes of South San Francisco and Presidio (PE, LS-1989) (7 occurrences).
*Sacramento Orcutt grass	<i>Orcuttia viscida</i>	PE	Vernal pool, grasslands. Eight occurrences mostly Buffalo Creek, Sacramento.
*San Bruno Mountain manzanita	<i>Arctostaphylos imbricata</i>	PT	Brushy slopes of San Bruno Mountain (> 700 feet) (4 occurrences).
*San Francisco gumplant	<i>Grindelia hirsutula</i> var. <i>maritima</i>	FC2	Cliffy coastal scrub plant community, open slopes in San Francisco (> 100 feet) (15 occurrences).
*San Francisco lessingia	<i>Lessingia germanorum</i>	PE	Found at elevations > 80 feet in Daly City and the Presidio area.
San Francisco Bay spineflower	<i>Chorizanthe cuspidata</i> var. <i>cuspidata</i>	FC2	Zero occurrences in CNDDDB.
*San Francisco manzanita	<i>Arctostaphylos hookeri</i> ssp. <i>franciscana</i>	FC2,PE	Serpentine slopes (> 300 feet). Last seen 1942, Presidio Ave.
*San Francisco owl's clover	<i>Triphysaria floribunda</i>	FC2,PE	Found at elevations > 100 feet at Point Reyes National Seashore, San Bruno Mountain, Lake Merced, and the Presidio.



Table J-1. Species of Concern  
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Common Name	Scientific Name	Status	Comments
Plants (continued)			
*San Francisco popcornflower	<i>Plagiobothrys diffusus</i>	FC2,PE	Found at elevations >200 feet in Presidio. Last seen - 1933.
*San Mateo thormint	<i>Acanthomintha duttonii</i>	FE	Found at Crystal Springs Reservoir.
San Mateo tree lupine	<i>Lupinus arboreus</i> var. <i>eximius</i>	FC2	Not in CNDDB.
*San Mateo woolly sunflower	<i>Eriophyllum latilobum</i>	FE	Grassy hillsides in San Mateo between I-280 and Merner Road (2 occurrences).
*Santa Cruz microseris	<i>Microseris (Stebbinoseris) decipiens</i>	FC2	All 16 occurrences in Santa Cruz County.
*Santa Cruz tarweed	<i>Holocarpha macradenia</i>	FC1	Uplands: coastal, prairie, foothill, grassland. Most 39 occurrences in Santa Cruz County.
Solano grass (Crampton's tuctoria)	<i>Tuctoria mucronata</i>	FE	Alkali playa grassland, Olcott Lake, Jepson Prairie Preserve. and area south of Davis.
*Sonoma ceanothus	<i>Ceanothus sonomensis</i>	FC2	Southwest-facing slopes in Sonoma (15 occurrences).
*Sonoma spineflower	<i>Chorizanthe valida</i>	FE	Present at Point Reyes National Seashore > 40 feet.
*South Bay clarkia	<i>Clarkia concinna</i> ssp. <i>automixa</i>	FC2	Zero occurrences in CNDDB.
Suisun Marsh aster	<i>Aster lentus</i>	FC2	Nearshore marsh vegetation, grows along bank or shore in tidally influenced coastal and valley freshwater marshes. Northeast of Fagan Slough, Jersey Island.
Suisun thistle	<i>Cirsium hydrophilum</i> var. <i>hydrophilum</i>	PE	Dense salt marsh vegetation, Grizzly Island.
*Tamalpais lessingia	<i>Lessingia micradenia</i> var. <i>micradenia</i>	FC2	Zero occurrences in CNDDB.
*Tamalpais manzanita	<i>Arctostaphylos hookeri</i> ssp. <i>montana</i>	FC2	Serpentine slopes of Mount Tamalpais.
*Tamalpais streptanthus	<i>Streptanthus batrachopus</i>	FC2	Hillsides, ridges of Mount Tamalpais.
*Tiburon jewelflower	<i>Streptanthus niger</i>	FE	Serpentine outcrops, cliffs, grasslands along Tiburon ridge.
Tiburon mariposa lily	<i>Calochortus tiburonensis</i>	FT	Serpentine grassland habitat - one occurrence.
Tiburon paintbrush	<i>Castilleja affinis</i> ssp. <i>neglecta</i>	FE	Serpentine grassland habitat. Six occurrences from Napa (American Canyon) to Tiburon.
Tiburon tarweed	<i>Hemizonia multicaulis</i> ssp. <i>vernalis</i>	FC2	Not in CNDDB.
Adobe lily	<i>Fritillaria pluriflora</i>	FC2	
*Adobe sanicle	<i>Sanicula maritima</i>	FC2	Last seen in Potrero Hills, San Francisco (>250 feet) before 1900. Other 10 occurrences found from Monterey south.
Alkali milk-vetch	<i>Astragalus tener</i> var. <i>tener</i>	FR2,PE	Found at elevations 0 to 50 feet in Union City, San Francisco, and Napa.
*Beach layia	<i>Layia carnosa</i>	FE	Point Reyes area >30 feet (PE). Other 22 occurrences found in Humboldt, Monterey and Drakes Bay.
Brittlescale	<i>Atriplex depressa</i>	FR2	Riparian salt marsh habitat. Two of 41 occurrences in area, Dozier (Solano) and Montezuma Slough.
Caper-fruited tropidocarpum	<i>Tropidocarpum capparideum</i>	FC2	Two of 12 occurrences in delta (Clifton Court Forebay & Union Island).



Table J-1. Species of Concern  
(page 8 of 9)

Common Name	Scientific Name	Status	Comments
Plants (continued)			
*Coast lily	<i>Lilium maritimum</i>	FC1	All 48 occurrences on north coast (Mendocino, Sonoma counties).
*Compact cobweb thistle	<i>Cirsium occidentale</i> var. <i>compactum</i>	FC2	Twelve occurrences all in San Luis Obispo area.
*Delta coyote-thistle	<i>Eryngium racemosum</i>	FC2	Delta area south of Stockton.
Delta tule-pea	<i>Lathyrus jepsonii</i> var. <i>jepsonii</i>	FC2	Freshwater and brackish marshes, < 5 feet elevation. (Brannan Island, Fagan's Marsh, Edgerly Island, Coon Island, Napa [CW])
Diamond-petaled poppy	<i>Eschscholzia rhombipetala</i>	FC2	One occurrence of 6 in Antioch (rest San Luis Obispo area). Nothing of Antioch site known.
*Fountain thistle	<i>Cirsium fontinale</i> var. <i>fontinale</i>	FE	Crystal Springs Reservoir, San Mateo.
Fragrant fritillary	<i>Fritillaria liliacea</i>	FC2,PE	Located > 40 feet elevation in coastal prairie, open grassland, including Jepson Prairie Preserve. (Point Reyes, Pulgas Ridge, Potrero Hills [San Francisco], Mills College [Oakland]).
Heartscale	<i>Atriplex cordulata</i>	FC2	Alkaline meadow at edge of marsh. Approximately 5 of 40 occurrences in area (Dozier, Solano). Most in south.
Hispid bird's-beak	<i>Cordylanthus mollis</i> ssp. <i>hispidus</i>	FC2	Tidal zone of Suisun Marsh; also alkaline grassland and alkaline scrub from Central Valley to Southern California.
*Interior California larkspur	<i>Delphinium californicum</i> ssp. <i>interius</i>	FC2	Zero occurrences in CNDDB.
*Large-flowered fiddleneck	<i>Amsinckia grandiflora</i>	FE	Annual upland grassland. LLL and Black Diamond Mine are sites.
Legenere	<i>Legenere limosa</i>	FC2	Vernal pool 2.4 miles south of Napa Hospital, and east side of Highway 29 (Suscol Ridge) at around 40 feet elevation.
*Little mousetail	<i>Myosurus minimus</i> ssp. <i>apus</i>	FC2	All 17 occurrences Southern California.
Marsh sandwort	<i>Arenaria paludicola</i>	FE	One occurrence at Presidio Swamp, Fort Point (San Francisco).
*Most beautiful (uncommon) jewelflower	<i>Streptanthus albidus</i> ssp. <i>peramoenus</i>	FC1	Serpentine grasslands in Santa Rosa hills and Oakland hills (800 feet).
Northcoast (Point Reyes) bird's-beak	<i>Cordylanthus maritimus</i> ssp. <i>palustris</i>	FC2,PE	38 occurrences mostly Drakes Bay & north, also Alameda Marsh, Tiburon, Palo Alto.
*Northcoast semaphore grass	<i>Pleuropogon hooverianus</i>	FC2	Grassy flats, under redwood trees, mostly north of area.
Papoose spikeweed (Congdon's tarplant)	<i>Hemizonia parryi</i> ssp. <i>congdonii</i>	FC1	Grasslands (< 100m) (LS-1986). 1 of 24 occurrences - Benicia along I-680, rest in Santa Clara and south.
*Pallid manzanita (Alameda manzanita)	<i>Arctostaphylos pallida</i>	PT,PE	Oakland, Berkeley hills, > 1,100 feet (LS-1991).
*Palmate-bracted bird's-beak	<i>Cordylanthus palmatus</i>	FE	Alkali sink habitat from Fresno, south, to Woodland, north.
*Recurved larkspur	<i>Delphinium recurvatum</i>	FC2	Alkaline soils and swales. Two of 21 occurrences around Clifton Court Forebay, rest in Southern California.
Robust spineflower	<i>Chorizanthe robusta</i>	FE	Coastal dune/scrub (30-150 feet). Alameda, Colma (San Francisco).
*Rock sanicle	<i>Sanicula saxatilis</i>	FC2	Talus slopes below chaparral, Mount Diablo and Lick Observatory.



Table J-1. Species of Concern  
(page 9 of 9)

Common Name	Scientific Name	Status	Comments
Plants (continued)			
Showy Indian clover	<i>Trifolium amoenum</i>	PE	Found at elevations 20-65 feet, Napa Junction and Buchli Station Road (LS-1952).
*Slough thistle	<i>Cirsium crassicaule</i>	FC2	Two sites near San Joaquin River (rest of 17 occurrences in Kern County).
Soft bird's beak	<i>Cordylanthus mollis</i> ssp. <i>mollis</i>	PE	Coastal salt marsh habitat. Point Pinole Regional Shoreline (Contra Costa County), Jersey Island, Grizzly Island.
*Two-carpeled dwarf-flax	<i>Hesperolinon bicarpellatum</i>	FC2	Zero occurrences in CNDDB.
*Valley sagittaria (Sanford's arrowhead)	<i>Sagittaria sanfordii</i>	FC2	Vernal marsh and muddy slough habitat (south and north of Central Valley - too far east of area).
Valley spearscale (San Joaquin saltbush)	<i>Atriplex joaquiniana</i>	FC2	Coastal prairie, alkaline-saline flat (Montezuma area). Also northeast of Slaughterhouse Point, Napa River.
*White-rayed pentachaeta	<i>Pentachaeta bellidiflora</i>	FE	Grassy slopes in Marin, Greenbrae, and Larkspur and east edge of San Bruno Mountain.
<p>Key:      *      Indicates species not in the LTMS Planning Area.  FE:      Federally listed Endangered  FT:      Federally listed Threatened  FC1:      Federal Candidate for Category 1  FC2:      Federal Candidate for Category 2  FR1/2:      Federally Recommended for Category 1 or 2  PE:      Presumed Extinct  CNDDB:      California Natural Diversity Database  LS 1992:      Last seen 1992</p>			



### J.3 PART 2: FISH HABITAT AND ENDANGERED SPECIES — MATRICES OF CONCERNS RELATED TO DREDGING AND DISPOSAL

Since 1993, federal and state lead agencies involved in the development of the LTMS EIS/EIR have been informally consulting with the USFWS, the National Marine Fisheries Service (NMFS), and the CDFG to identify the species of concern located within the LTMS Planning Area. The purpose of these consultations was to provide the LTMS agencies, the resource agencies, and the dredging community a set of common guidelines to avoid adverse impacts on species of concern from dredging and disposal activities, and to establish a more predictable regulatory environment for dredging and aquatic disposal.

The resource agencies evaluated the dredging and aquatic disposal activities in the Bay and developed a list of fish species that could be adversely affected by such activities.<sup>1</sup> This list currently includes the following species: Winter-run chinook salmon, Delta smelt, Sacramento splittail, longfin smelt, Pacific herring, Dungeness crab, steelhead trout, coho salmon, and recreational marine fishes.

The resource agencies identified the potential impacts to the sensitive species during dredging and aquatic disposal and the critical locations of the species within the Bay during different life stages. Impacts to an aquatic species may be the result of the loss of benthic habitat due to dredging or disposal of sediment, a change in water circulation patterns and suspended particulate levels, increased sedimentation rates, a reduction in dissolved oxygen, and entrainment during dredging and disposal. Acute toxicity to fish and aquatic organisms may occur directly at the dredging and disposal sites.

From this information, the agencies developed three matrices (Tables J-2, J-3, and J-4), which summarize the agencies' conclusions and describe proposed restrictions that affect the timing and design of dredging and disposal projects. The matrices outline time periods during the year when dredging and aquatic disposal activities can occur without affecting sensitive species. The matrices also indicate the appropriate times when the agencies must be consulted under the Endangered Species Act.

The three subjects covered by the matrices are:

1. Resources of Concern Related to Dredged Material Disposal (Table J-2);
2. Concerns Related to Dredging and Endangered Species in San Francisco Estuary (west of Sherman Island) (Table J-3); and
3. Concerns Related to Dredging and Other Species in San Francisco Estuary (west of Sherman Island) (Table J-4).

The matrices provide an administrative tool to make decisions about sensitive species. It is meant to be a flexible tool, subject to change as the state or federal governments list new species as endangered or threatened or remove species from the current list, or as new information is gathered on species that will refine the matrices. The matrices will be revised as needed and will evolve with the LTMS for the Bay Area. While the intent of the LTMS EIS/EIR is to establish a strategy for sediment disposal, the matrix has been expanded to include dredging activities as well. As jointly agreed upon by the resource agencies, expansion of this framework will directly benefit the dredging community.

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1. The LTMS agencies have not prepared a similar list for species of concern related to development of upland/wetland reuse (UWR) sites. Any potential impacts would depend on the number and exact locations of such sites, which are not defined in this EIS/EIR. The effects on endangered species from the development of specific UWR sites are appropriately addressed in site-specific environmental reviews.