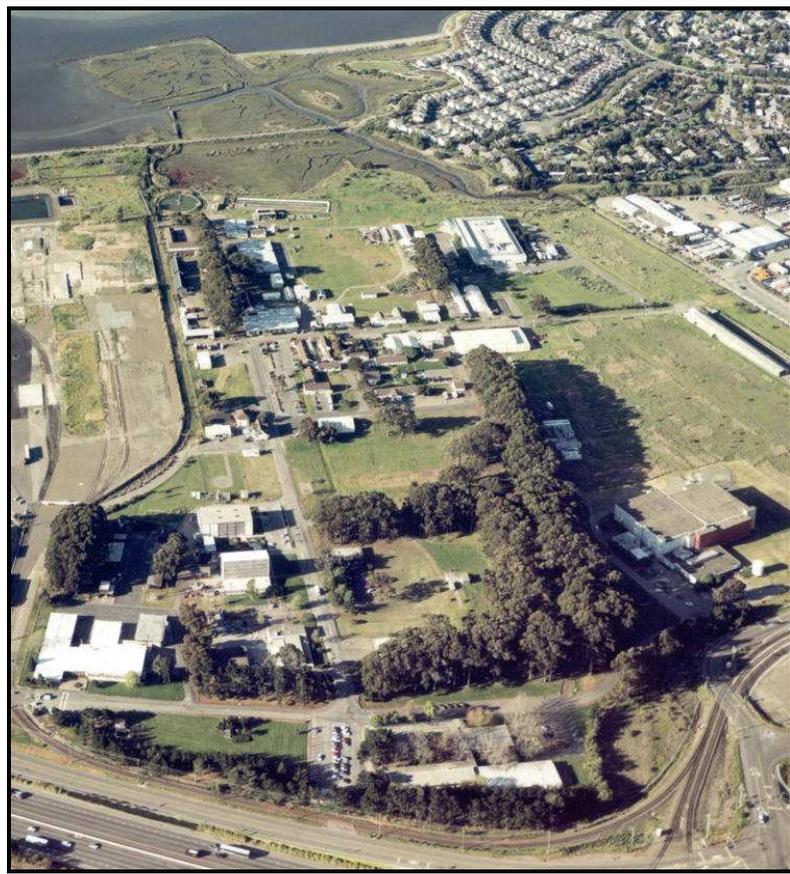


# FINAL REPORT

## BOTANICAL SURVEY REPORT



*Prepared for*  
**University of California, Berkeley**  
**Richmond Field Station**  
**Richmond, California**

August 10, 2007

**URS**

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# LIST OF ACRONYMS AND ABBREVIATIONS

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CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
EBCNPS	East Bay (Chapter) California Native Plant Society
ESA	Environmentally sensitive area
FsC	Flatlands Shore Central
FsN	Flatlands Shore North
JOI	Jepson Online Interchange
km	kilometer
m	meter
MCV	Manual of California Vegetation
Mlt	Point Molate/Point. Richmond areas
RFS	Richmond Field Station
UC	University of California
VdN	North Delta

## **1.1 PURPOSE**

The University of California (UC) is in the planning phase of an overall master plan of future development of the UC Richmond Field Station (RFS). As part of the planning process, and in order to determine the environmental effects of potential development on special status and sensitive plants and plant communities, botanical surveys were needed. This report incorporates available plant lists prepared by botanists previously surveying at RFS, information on historical soil disturbance, and results of extensive botanical surveys conducted in the summer of 2006 as part of the present study to aid in determining the relative habitat value of several sections of the RFS where development may occur in the future. Maps delineating the selected upland sections of the RFS into three distinct resource areas based on habitat quality have been prepared as part of this report.

## **1.2 STUDY AREA**

The 160-acre area that is now the RFS was once part of the larger Rancho San Pablo that used to extend over much of Contra Costa County. It is located in the eastern edge of the San Francisco Bay in the City of Richmond (Figure 1). Interstate 580 and a portion of a rail line borders its northeasterly side, industrial development areas lie to the west, the Marina Bay housing development and Stege Marsh lie to the southwest, and a large remediated area lies to the southeast.

The study area consists of a number of open space sections of the RFS. For purposes of this study, these sections were named as follows: North Meadow, Gull Meadow, Northeast Meadow, Northwest Meadow, East Meadow, Far North Meadow, 580 Meadow, West Meadow, Central Meadow, EPA Meadow North, EPA Meadow South, and Big Meadow. Locations of these areas are shown on Figure 2.

UC Berkeley began purchasing land to develop a research facility complex in Richmond in the 1950s. Current facilities include the Northern Regional Library Facility, the Earthquake Engineering Center, the Environmental Engineering and Health Sciences Laboratory, and the Forest Products Laboratory. Also present are experimental facilities for the Institute for Transportation Studies and other campus-based research in engineering and natural sciences.





### 1.3 NATURAL SETTING

The study area is a mosaic of native and non-native habitats. The majority of the study area is currently a native and non-native grass-dominated wet meadow. Several man-made landscape habitats, such as herbaceous groundcovers and eucalyptus and other ornamental tree groves are present on the site. The native plant-dominated coastal terrace prairie conservation area (Big Meadow) demonstrates the largest species diversity in the study area. Most areas are regularly mowed as part of the UC RFS maintenance program. Several sections of the study area tend to pond water for extended periods throughout the rainy season and may potentially contain jurisdictional seasonal wetlands.

Big Meadow represents the only coastal terrace prairie grassland on lowland clay soils (Clear Lake-Cropley and Capay-Rincon soil types) in the greater East Bay Area (Amme, 1993). It is considered a “rare natural community” of highly limited distribution (CDFG, 2003). Rare natural communities may or may not contain rare, threatened, or endangered species. The most current version of the California Natural Diversity Database's (CNDDDB) List of California Terrestrial Natural Communities may be used as a guide to the names and status of communities (CNDDDB, 2003). Asterisks (\*) denote communities that are either known or believed to be rare and of high priority for inventory in CNDDDB. If an alliance is starred, this means that all of the associations within it will also be considered rare and of high inventory priority. The dominant sensitive vegetation types within the study area consist of California Oatgrass Bunchgrass Grassland Alliance (CNDDDB \*41.050.00) and Purple Needlegrass Alliance (CNDDDB \*41.150.00). In addition, several Non-Native Grassland Alliances (CNDDDB 42.000.00) occur in the study area (CDFG, 2003). The RFS coastal terrace prairie plant community supports populations of sensitive plant species with very limited distribution in Contra Costa and Alameda Counties (EBCNPS, 2004), many of which have been identified at RFS even in partially disturbed areas similar to the project site, when not regularly mown. Some of these plants are listed as follows:

Plants presumed extirpated from the East Bay (Rank A1x):

- Purple owl's clover (*Castilleja exserta* ssp. *latifolia* [*Orthocarpus purpurascens* var. *latifolia*])

Plants only known from two or fewer botanical regions in the East Bay either currently or historically (Rank A1):

- False pimpernel (*Centunculus minimus*)
- California ponysfoot (*Dichondra donnelliana*)
- Jepson's blue wildrye (*Elymus glaucus* ssp. *jepsonii*)
- Ladies-tresses (*Spiranthes romanzoffiana*)

Plants currently known from three to five regions in East Bay, or otherwise threatened (if more than five regions, meeting other important criteria such as small, stressed or declining populations, small geographical range, limited or threatened habitat etc. (Rank A2):

- Dense sedge (*Carex densa*)
- Coast spikeweed (*Deinandra corymbosa* ssp. *corymbosa* [*Hemizonia* c.])
- Hansen's squirreltail (*Elymus hansenii* [*E. glaucus* x *E. elymoides*])
- Coastal eryngo (*Eryngium armatum*)
- Foxtail barley (*Hordeum jubatum*)
- Ajuga hedge nettle (*Stachys ajugoides* ssp. *ajugoides*)

Plants currently known from six to nine regions in East Bay, or otherwise threatened (if more than nine, meeting other important criteria such as small, stressed or declining populations, small geographical range, limited or threatened habitat etc.) (Rank B):

- Small-bract sedge (*Carex subbracteata*)
- Oregon timwort (*Cicendia quadrangularis*)
- Slender wheatgrass (*Elymus trachycaulus* ssp. *trachycaulus*)
- Hayfield tarweed (*Hemizonia congesta*)
- Brown-headed rush (*Juncus phaeocephalus* var. *Phaeocephalus*)
- Willow-leaved dock (*Rumex salicifolius* var. *salicifolius*)

Plants currently known from 10 or more regions in East Bay, but potentially threatened if certain conditions persist, such as overdevelopment, water diversions, excessive grazing, weed or insect invasions, etc. (Rank C):

- Suncups (*Camissonia ovata*)
- Berkeley sedge (*Carex tumulicola*)
- California oatgrass (*Danthonia californica* var. *californica*)
- Clustered toadrush (*Juncus bufonius* var. *congestus*)
- Big squirreltail (*Elymus multisetus* [*Sitanion jubatum*])
- Hairy gumplant (*Grindelia hirsutula* var. *hirsutula*)
- Spreading brown-headed rush (*Juncus phaeocephalus* var. *paniculatus*)
- Purple needlegrass (*Nassella pulchra*)
- Wild hyacinth (*Triteleia hyacinthina*)

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**2.1 STUDY METHODS**

Botanical surveys were conducted in accordance with CDFG's *Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities* (CDFG, revised September 2003). They were conducted in a manner that would locate any listed species that may have been present. Specifically the following requirements of the CDFG protocol were implemented:

- The surveys were conducted in the field at the time of year when listed species should have been both evident and identifiable during their flowering period.
- The surveys were floristic in nature. A floristic survey requires that every plant observed be identified to the extent necessary to determine its rarity and listing status. In addition, a sufficient number of visits spaced throughout the growing season is necessary to accurately determine what plants exist on the site. In order to properly characterize the site and document the completeness of the survey, a complete list of plants observed on the site is included in this botanical survey report.
- The surveys were conducted in a manner consistent with conservation ethics. Collections (voucher specimens) of listed species, or suspected rare, threatened, or endangered species were made only when such actions did not jeopardize the continued existence of the population and in accordance with applicable state and federal permit requirements. Photography was used to document plant identification and habitat whenever possible, but especially when the listed plant population could not withstand collection of voucher specimens.
- The surveys were conducted using systematic field techniques in all habitats of the site to ensure a thorough coverage of potential impact areas.
- The surveys were well documented. When a listed plant or rare plant community was located, a California Native Species (or Community) Field Survey Form or equivalent written form, accompanied by a copy of the appropriate portion of a 7.5-minute topographic map with the occurrence mapped, was completed and submitted to the Natural Diversity Database.

Prior to field surveys, literature and Internet searches were conducted. Several sources of botanical information and previous plant survey lists prepared for various areas of the Richmond Field Station were reviewed:

- Plant List of Species Occurring at RFS prepared by UC Jepson Herbarium curator and botanist Barbara Ertter;
- Plant List prepared by Lee Echols;
- Plant List prepared by URS botanists Michele Lee and George Strnad for areas affected by the UC remediation project;
- Unusual and Significant Plants of Alameda and Contra Costa Counties (Lake/EBCNPS, 2004);
- Plant surveys by UC botanists (Lidicker et al., 2003);

- Plant survey performed by botanist Monica Stafford, 2006;
- Plant surveys performed by botanist David Amme (Amme, 1993); and
- Review of Annotated Checklist of the East Bay Flora (Ertter, 1997).

Development occurred on some meadow sites subsequent to previously-conducted plant surveys that were used in this report; consequently some plant observations are shown overlying areas of bare earth, asphalt paving, etc., and are not representative of the current condition. Available information about listed plants in the area was reviewed and assembled using the CNDDDB, the California Native Plant Society's (CNPS) Electronic Inventory, and the Jepson Online Interchange (JOI). A catalogue of all federal, state, EBCNPS, and CNPS listed plants that were identified in the study area or its vicinity (9-quad search) was assembled. The catalogue contained detailed CNPS information on approximately 214 listed plants (federal, state, EBCNPS, and CNPS List 1-4) as well as full size color pictures of those plants for which pictures were available. The catalogue was reviewed jointly by all botanists prior to each milestone field survey.

All potential habitat types known to support listed plants within the study area were completely surveyed during their bloom periods by the botanists using thorough, side-by-side survey transect methods. Less survey effort was focused on heavily disturbed areas and areas dominated by dense infestations of invasive, non-native species.

### **2.1.1 Criteria Used to Identify High Quality Grassland Habitat**

In order to determine the relative grassland habitat quality of each meadow, listed plant locations, their densities where information was provided, numbers of species of listed plants within each meadow, and level of soil disturbance were evaluated. Using these criteria, high quality grassland habitat was operationally defined by the UC planners as areas in which *Danthonia californica* var. *californica* and/or *Nassella pulchra* was present on-site, along with  $\geq 6$  other EBCNPS ranked A or B plant species.

Pursuant to this definition, Figure 4 illustrates the location of high quality grassland habitat.

## **2.2 DATES OF SURVEYS AND BOTANISTS PERFORMING SURVEYS**

Listed plants and rare plant communities surveys were conducted by botanists, as indicated in Table 2-1. All botanists who participated in the surveys for this report have long-term experience conducting floristic field surveys, possess thorough knowledge of plant taxonomy and plant community ecology, are familiar with many of the plants in the area including listed species, are familiar with the appropriate state and federal statutes related to plants and plant collecting and have experience analyzing impacts of development on native plant species and communities.

**Table 2-1**  
**Survey Dates and Personnel Performing Surveys**

<b>Date of Survey</b>	<b>Personnel</b>	<b>Time Spent on Survey</b>	<b>Areas Surveyed</b>
05/09/2006 – 05/10/2006	Dina Robertson, Casey Stewman, George Strnad	48 hours	Entire Study Area
06/14/2006 – 06/15/2006	Dina Robertson, Casey Stewman, George Strnad	48 hours	Entire Study Area
08/17/2006 – 08/18/2006	Dina Robertson, Casey Stewman, George Strnad	42 hours	Entire Study Area

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## 3.1 LISTED PLANTS OBSERVED IN THE STUDY AREA

Twenty-three listed species were observed in the project area and are discussed below. Table 3-1 summarizes listed plants that were identified in the study area during the protocol botanical surveys. Their locations are shown in Appendix C on Drawings S-1 through S-4.

**Table 3-1  
State, Federal and EBCNPS List Plants Identified in the Study Area**

Scientific Name	Common Name	Family	CNPS List	EBCNPS List	State Status	Fed. Status	Natural Communities	Blooming Period
<i>Camissonia ovata</i>	suncups	Onagraceae	-	C	-	-	Coastal bluffs and open grassy fields	Mar-Jun
<i>Carex densa</i>	dense sedge	Cyperaceae	-	A2	-	-	Seasonally wet places	Mar-Apr
<i>Carex subbracteata</i>	small-bract sedge	Cyperaceae	-	B	-	-	Miscellaneous wetlands, grasslands to open forests with elevation below 900m	Mar-Apr
<i>Carex tumulicola</i>	foothill (Berkeley) sedge	Cyperaceae	-	C	-	-	Miscellaneous wetlands, open woodlands, coastal prairie, mixed evergreen forest, and yellow pine forest	Mar-Apr
<i>Centunculus minimus</i>	false pimpernel	Primulaceae	-	A1	-	-	Vernal pools and moist places along the coast	Apr-May
<i>Cicendia quadrangularis</i>	Oregon timwort, Oregon microcala	Gentianaceae	-	B	-	-	Annual and perennial grasslands, vernal pools, and open spaces from 0 – 2700m	Mar-May
<i>Danthonia californica</i> var. <i>californica</i>	California oatgrass	Poaceae	-	C	-	-	Annual and perennial grasslands, generally moist open sites, meadow and forests < 1900m	May-Jul
<i>Deinandra corymbosa</i> ssp. <i>corymbosa</i>	coast spikeweed	Asteraceae	-	A2	-	-	Coastal grasslands and coastal bluffs up to 300m	May-Oct
<i>Dichondra donnelliana</i>	California ponysfoot	Convolvulaceae	-	A1	-	-	Open slopes and moist fields up to 1500'	Mar-Jun
<i>Elymus hansenii</i>	Hansen's squirreltail	Poaceae	-	A2	-	-	Annual and perennial grasslands	Jun-Aug
<i>Elymus multisetus</i>	big squirreltail	Poaceae	-	C	-	-	Dry slopes, grasslands, and open, sandy to rocky areas	Jun-Aug

**Table 3-1  
(Continued)**

Scientific Name	Common Name	Family	CNPS List	EBCNPS List	State Status	Fed. Status	Natural Communities	Blooming Period
<i>Elymus trachycaulus</i> ssp. <i>trachycaulus</i>	slender wheatgrass	Poaceae	-	B	-	-	Dry to moist open areas in forests and woodlands	Jun-Aug
<i>Eryngium armatum</i>	coastal eryngo	Apiaceae	-	A2	-	-	Vernal pools and wet depressions in coastal prairies and bluffs	May-Aug
<i>Grindelia hirsutula</i> var. <i>hirsutula</i>	hairy gumplant	Asteraceae	-	C	-	-	Open and dry sandy, clay or serpentine slopes	Jul-Oct
<i>Hemizonia congesta</i> ssp. <i>congesta</i>	hayfield tarweed	Asteraceae	-	B	-	-	Grasslands and serpentine soils	Apr-Oct
<i>Hordeum jubatum</i>	foxtail barley	Poaceae	-	A2	-	-	Miscellaneous habitats	May-Jul
<i>Juncus bufonius</i> var. <i>congestus</i>	clustered toadrush	Juncaceae	-	C	-	-	Alkaline and salt marshes	May-Aug
<i>Juncus phaeocephalus</i> var. <i>paniculatus</i>	spreading brown-headed rush	Juncaceae	-	C	-	-	Swampy places, stream banks and meadows	May-Aug
<i>Juncus phaeocephalus</i> var. <i>phaeocephalus</i>	brown-headed rush		-	B	-	-		
<i>Nassella pulchra</i>	purple needlegrass	Poaceae	-	C	-	-	Dry slopes, oak woodlands, chaparral, and grasslands <5000'	Mar-May
<i>Rumex salicifolius</i> var. <i>salicifolius</i>	willow-leaved dock	Polygonaceae	-	B	-	-	Moist places from 100'-6500'	May-Sep
<i>Spiranthes romanzoffiana</i>	ladies-tresses	Orchidaceae	-	A1	-	-	Coastal bluffs, wet meadows, freshwater marshes and seeps	Jun-Aug
<i>Stachys ajugoides</i> ssp. <i>ajugoides</i>	ajuga hedge nettle	Lamiaceae	-	A2	-	-	Moist open spaces	Jul-Aug
<i>Triteleia hyacinthina</i>	wild hyacinth	Liliaceae	-	C	-	-	Grasslands and vernal wet meadows up to 2000'	Jun-Oct

**TABLE 3-1 NOTES:**

**Local Status Codes, East Bay Chapter** (based on unusual and significant plants occurring in Pt. Molate/Pt. Richmond areas (Mlt), Flatlands Shore Central (FsC) and Flatland Shore North (FsN) botanical regions of Contra Costa and Alameda County (EBCNPS 2004) and observations of UC Berkeley botanists Bill Lidicker, Barbara Ertter and Bruce Baldwin (Lidicker et al., 2003):

- A1** Plants known from two or less botanical regions in East Bay, either currently or historically.
- A2** Plants currently known from three to five regions in East Bay, or otherwise threatened (if more than five regions, meeting other important criteria such as small, stressed or declining populations, small geographical range, limited or threatened habitat etc.).
- B** Plants currently known from six to nine regions in East Bay, or otherwise threatened (if more than nine, meeting other important criteria as described for A2).
- C** Plants currently known in 10 or more regions but potentially threatened

**CNPS Status Codes** (California Native Plant Society):

- 1A.** Presumed extinct in California
- 1B.** Rare or Endangered in California and elsewhere
- 2.** Rare or Endangered in California, more common elsewhere
- 3.** Plants for which more information is needed - Review list
- 4.** Plans of limited distribution – Watch list

**Threat Code extensions and their meanings** (California Native Plant Society):

- .1** – Seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat)
- .2** – Fairly endangered in California (20%-80% occurrences threatened)
- .3** – Not very endangered in California (<20% of occurrences threatened or no current threats known)

## 3.1.1 Suncups



© 2003 George Strnad, ASLA

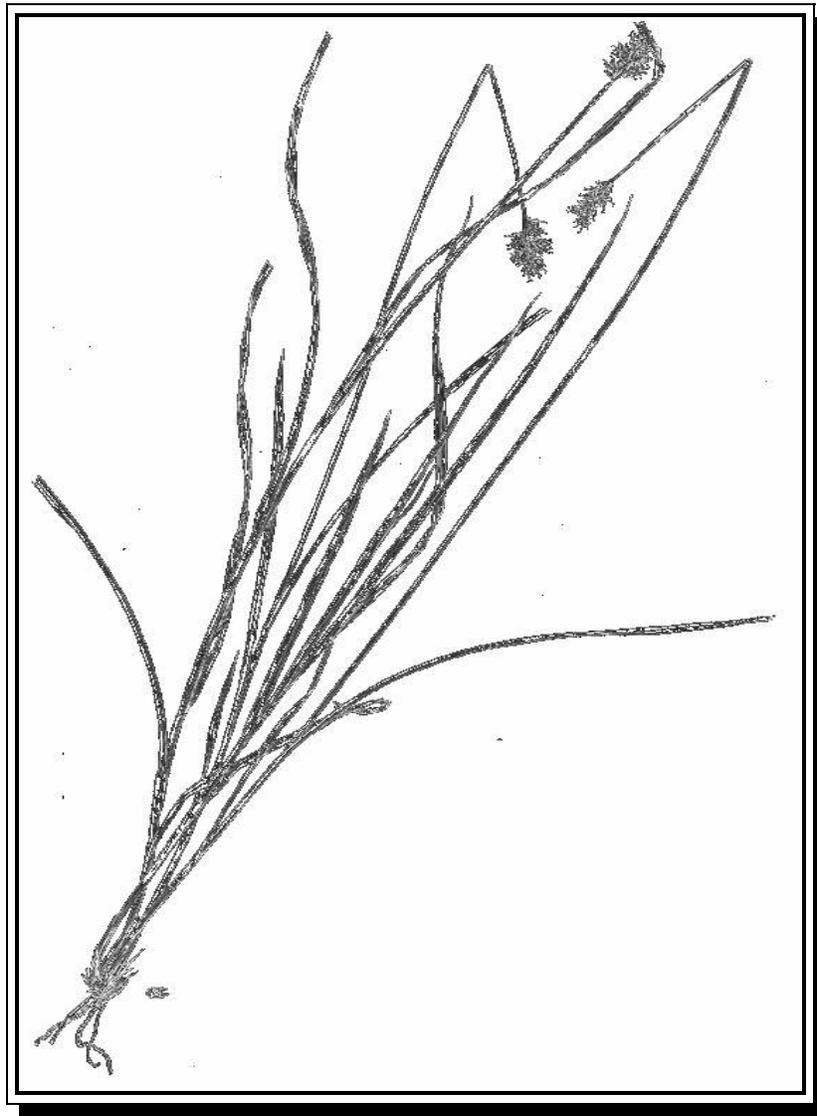
**Suncups (*Camissonia ovata*)** has been observed in Big Meadow (Drawing S-1), Eucalyptus, and 580 Meadows (Drawing S-2), EPA, West, and Central Meadows (Drawing S-3), and North Meadow (Drawing S-4). Suncups are perennial herbs and belong to the evening primrose family (Onagraceae). The leaves form a basal clump. Flowers are 8 to 23 mm in diameter; develop in spikes, racemes or solitary in axils. Flowers generally open at dawn and are cup-like with four bright yellow petals and light yellow centers that are nestled in a circle of bright green leaves. The blooming period occurs from March to June. The plant's preferred habitats are coastal bluffs and open, grassy fields in clay soil. It occurs in the San Francisco Bay Area, along the California North and Central Coast and in the North and South Coast Ranges (JOI, 2006). This plant is currently known in over 10 regions in Alameda and Contra Costa Counties. However, Suncups appear to be in decline; its populations are limited and its habitat is threatened by development. Suncups are listed by EBCNPS as a C rank species.

## 3.1.2 Dense sedge



**Dense sedge** (*Carex densa*) has been observed in Big Meadow (Drawing S-1) and West Meadow (Drawing S-3). It is a perennial that belongs to the sedge family (Cyperaceae). The plant's preferred habitats are miscellaneous wetlands and miscellaneous other habitats (at least seasonally moist), grasslands to open forests with an elevation below 900 m. It occurs in San Francisco Bay Area, Northwestern California, Cascade Range, Sierra Nevada, Great Central Valley, along the California North and Central Coast and in the San Gabriel Mountains. It also occurs in Washington and Nevada (JOI, 2006). It has been observed at the RFS. Dense sedge is known to occur in three to five regions in Alameda and Contra Costa Counties and is listed by EBCNPS as an A2 rank species.

## 3.1.3 Small-bract sedge



**Small-bract sedge** (*Carex subbracteata*) has been observed in Big Meadow (Drawing S-1), EPA and Central Meadows (Drawing S-3), and Gull, East, North and Northeast Meadows (Drawing S-4). It is a perennial monoecious plant forming dense grass-like clumps with green to brownish flower heads held above the leaves. It belongs to the sedge family (Cyperaceae). Staminate flowers are typically at the base of each spikelet and occur from March to April. The plant's preferred habitats are miscellaneous wetlands and miscellaneous other habitats (at least seasonally moist), grasslands to open forests with an elevation below 900 m. It occurs in San Francisco Bay Area, along the California North and Central Coast and in the North and South Coast Ranges. It has been observed at the RFS (Lidicker et al., 2003; Ertter, 2002). The plant is currently known from six to nine regions in Alameda and Contra Costa Counties. Small-bract sedge is listed by EBCNPS as a B rank species.

## 3.1.4 Foothill (Berkeley) sedge



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**Foothill (Berkeley) sedge (*Carex tumulicola*)** has been observed in North Meadow (Drawing S-4). It is a monocot in the Cyperaceae (sedge) family that occurs in miscellaneous wetlands, meadows, open woodlands, coastal prairie, mixed evergreen forest, and yellow pine forest. Foothill sedge is a tufted perennial with short rhizomes. The pistillate flowers have two stigmas and flower March through April. This species is distributed along the northern and central coast of California, North Coast Ranges, San Francisco Bay Area, Sierra Nevada, and Channel Islands (Hickman, 1993). Foothill sedge has been identified at RFS (Brady and Associates et al., 1994) and was known to occur at Point Isabel (last seen 1897) (EBCNPS, 2004). It is ranked by EBCNPS as a C plant.

## 3.1.5 False pimpernel

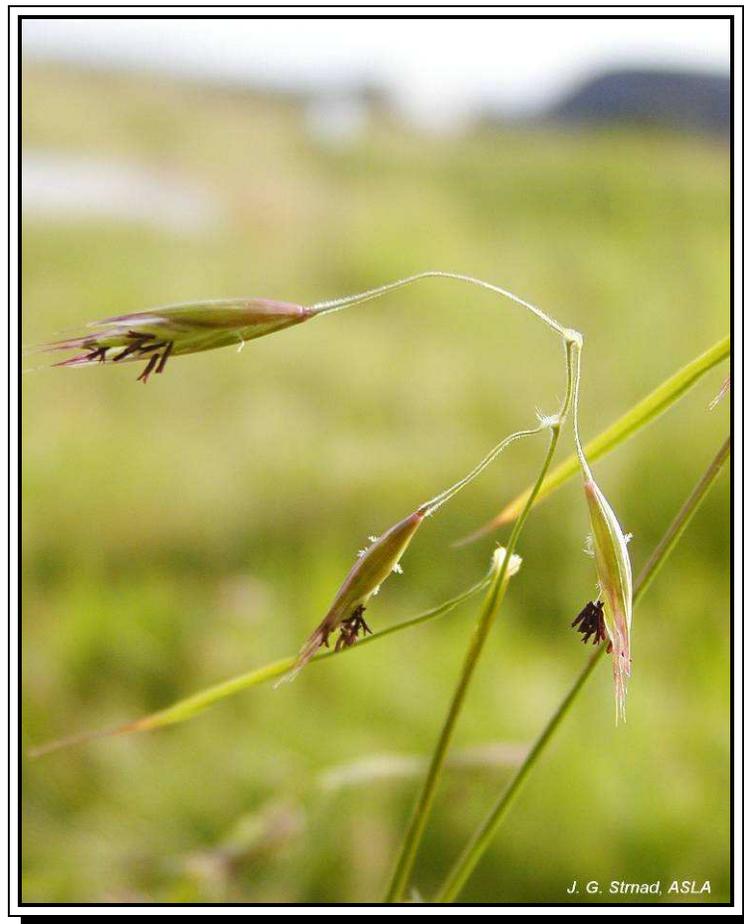


**False pimpernel** (*Centunculus minimus*) has been observed in EPA Meadow N (Drawing S-3). It is a glabrous to glandular-hairy perennial herb belonging to the primrose family (Primulaceae). The plant has ascending stems, 3-10 cm long and oblanceolate to widely obovate leaves. Tiny white flowers are urn-shaped. The blooming period occurs typically from April to May. The plant inhabits vernal pools and moist places along California's North and Central Coast, the San Francisco Bay area, in the North and South Coast Ranges, northern Sierra Nevada foothills, and into British Columbia (JOI, 2006). False pimpernel has been observed and documented at the RFS. It occurs in small populations in limited areas and its habitat is threatened. In Alameda and Contra Costa Counties, it is also known to occur in the Corral Hollow area, Mlt: Point Molate/ Point Richmond areas, and historically in VdN: Big Break (1955). False pimpernel is ranked by EBCNPS as an A1 species.

3.1.6 Oregon timwort, *Oregon microcala*

**Oregon timwort, *Oregon microcala* (*Cicendia quadrangularis*)** has been observed in Big Meadow (Drawing S-1), West, Central and EPA Meadows (S-3) and Northwest Meadow (S-4). It is a small (<9 cm), glabrous, annual plant belonging to the gentian family (Gentianaceae). The plant has simple stems, which may branch near the base, ovate to oblanceolate, cauline and internodal leaves and a calyx much larger than its corolla tube. It has solitary yellow flowers with four ovate petals rounded at their tips. The blooming period occurs typically from March to May. The plant occurs in annual and perennial grasslands, vernal pools and open spaces from 0 to 2,700 m along California's North and Central Coast, in outer North Coast Ranges, central Sierra Nevada foothills, the Great Valley and into Oregon. *Oregon microcala* has been observed and documented at the RFS during URS' special status plant surveys in March 2003 and also by others (Lidicker et al., 2003). The plant is currently known from six to nine regions in Alameda and Contra Costa Counties. *Oregon microcala* is ranked by EBCNPS as a B species.

## 3.1.7 California oatgrass



**California oatgrass** (*Danthonia californica* var. *californica*) has been observed in all meadows except for Far North Meadows (Drawings S-2). It is a large (30 –100 cm) perennial, cool season bunchgrass with conspicuous spike-like panicles. Each of the two to five spikelets is almost covered by large glumes. The blooming period occurs from May to July. Variety *californica* has four to eight florets in a spikelet and glabrous leaves, which are only hairy (non-papillate hairy) near the ligule (unlike variety *americana*, which has only three to five florets per spikelet and densely hairy leaves with basally papillate hairs). The plant belongs to the grass family (Poaceae) and reproduces from seeds, tillers and cleistogamous spikelets in mid-culm sheaths. It is a very good soil stabilizer. California oatgrass occurs in annual and perennial grasslands, generally moist open sites, meadows and forests below 1,900 m in northwestern California, the Cascade Range, Sierra Nevada and central western California. It has been observed in the project area (URS, 2003) and at the RFS (Lidicker et al., 2003; Ertter, 2002; Amme, 1993). California oatgrass occurs in more than nine areas in Contra Costa and Alameda Counties, however, its populations are very small and the coastal prairie habitat, where it occurs, is severely limited and in many areas threatened by development. California oatgrass is ranked by EBCNPS as a C species.

## 3.1.9 Coast spikeweed



G. J. Strnad, ASLA

**Coast spikeweed** (*Deinandra corymbosa* ssp. *corymbosa* [*Hemizonia c.*]) has been observed in Eucalyptus Meadow (Drawing S-2) and EPA Meadow N (Drawing S-3). It is a large (20 – 100 cm) strongly and pleasantly odorous annual plant with erect or decumbent bristly stems. It belongs to the aster family (Asteraceae). Lower leaves are typically linear to oblanceolate, deeply pinnatifid, 3-9 cm long, 0.3-2 cm wide and upper leaves are smaller and may become entire in older plants. All herbage is densely villous and glandular. Flower heads are yellow, cymose or paniculate and peduncled with 18 to 24-ray florets in each head. The blooming season occurs from May to October. Coast spikeweed prefers coastal grasslands and coastal bluffs up to 300 m along California's central North Coast, San Francisco Bay and northern and central Central Coast. It has been observed at RFS (Lidicker et al., 2003; Ertter, 2002; Amme, 1993). The plant is currently only known from three to five regions in Alameda and Contra Costa Counties. Coast spikeweed is ranked by EBCNPS as an A2 species.

## 3.1.10 California ponysfoot



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**California ponysfoot** (*Dichondra donelliana*) has been observed in the Eucalyptus Meadow (Drawing S-2). It is an endemic perennial in the morning-glory family (Convolvulaceae). Creeping stolons form dense and extensive brownish silky mats. Alternate reniform leaves form at ends of long petioles. Small, white solitary flowers bloom March through June. California ponysfoot is found in open slopes and moist fields up to an elevation of 4,500 m. It is known to occur in the North Coast, northern Sierra Nevada, and Central Western California, and was most likely introduced in the South Coast Ranges and northern Channel Islands (JOI, 2006). It is ranked by EBCNPS as an A1 species.

### 3.1.11 Hansen's squirreltail

(No image available)

**Hansen's squirreltail** (*Elymus hansenii*), formerly *Sitanion hansenii*, has been observed in the Big Meadow (Drawing S-1). This species is widespread in California, especially in the mountains of the Mojave Desert and the Sierra Nevada, etc. (Munz, 1968) in annual and perennial grasslands. It is a grass (Poaceae family) that is not described in *The Jepson Manual*, except to note that it is a hybrid of *Elymus glaucus* and *Elymus elymoides* (Hickman, 1993). Munz (1968) describes it as a tufted perennial with a bristly spike that grows from 50 to 100 cm tall. It usually has two spikelets per node and the lemma awns are four to five cm long. The blooming period is June through August. Munz (1968) notes that most of these hybrids are sterile. Hansen's squirreltail is listed by EBCNPS as A2.

## 3.1.12 Big squirreltail



**Big squirreltail** (*Elymus multisetus*) is located in Big (Drawing S-1), EPA, and West Meadows (Drawing S-3). It is a perennial herb in the grass family (Poaceae). It has a glabrous leaf sheath and spikelet has glumes that are divided into three to five awns. It blooms May through July. This subspecies is widespread and inhabits dry slopes, grasslands, and open, sandy to rocky areas throughout California up to Washington. It also occurs in the Rocky Mountains (JOI, 2006). This species has been identified at the RFS. Although this plant is widespread, big squirreltail occurs in small populations in threatened habitats. It is listed by EBCNPS as a C species.

## 3.1.13 Slender wheatgrass



**Slender wheatgrass (*Elymus trachycaulus* ssp. *trachycaulus*)** has been observed in Big Meadow (Drawing S-1) and West Meadow (Drawing S-3). It is a perennial grass (Poaceae family) that is tufted and 30-150 centimeters tall. This subspecies occurs throughout California, except in the Great Central Valley, in dry to moist open areas in forests and woodlands (Hickman, 1993). It blooms June through August. This subspecies has been identified at the RFS (Brady and Associates et al., 1994; Amme, 1993). This is a significant finding because EBCNPS does not have any records of this subspecies in Mlt: Point Molate/Point Richmond areas, FsN: Flatlands Shore North areas or FsC: Flatlands Shore Central areas. Slender wheatgrass is listed by EBCNPS as a B species.

## 3.1.14 Coastal eryngo



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Coastal eryngo (*Eryngium armatum*) is located in Big Meadow (Drawing S-1), and West Meadow (Drawing S-3). It is in the Apiaceae family and is erect or decumbent, generally branches from the main stem, and is 10-50 cm tall. Its leaves are generally sharply serrate to irregularly cut. Coastal eryngo is typically found in vernal pools and wet depressions in coastal prairies and bluffs along the northern and central coast of California. The small white or cream-colored flowers (which are sometimes purplish) bloom May through August. Coastal eryngo has been observed at the RFS (Lidicker et al., 2003; Ertter, 2002). This species is threatened by loss of wetlands in the East Bay (EBCNPS, 2004) and is listed by EBCNPS as rank A2.

## 3.1.15 Hairy gumplant



**Hairy gumplant** (*Grindelia hirsutula* var. *hirsutula*) is located in Big and Northwest Meadows (Drawing S-1), EPA and West Meadows (Drawing S-3). It is a perennial in the sunflower family (Asteraceae). Leaves range in color from a yellow-, red-, or gray-green and are puberulent to tomentose. Flowerheads are generally subtended by bracts. Involucre is generally 12-23 mm in diameter and phyllaries are erect to spreading. It generally blooms from July to October. Hairy gumplant inhabits the San Francisco Bay area, Central Coast, the Inner and Outer South Coast Ranges and the Western Transverse Ranges in open and dry sandy, clay or serpentine slopes (JOI, 2006). This plant is listed by EBCNPS as a rank C species.

## 3.1.16 Hayfield tarweed



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**Hayfield tarweed (*Hemizonia congesta*)** has been observed in Big Meadow (S-1), but was not identified to the subspecies level. It is an annual in the sunflower family (Asteraceae). It grows from a simple stem, then branching above middle of plant. Its leaves are generally linear to narrowly elliptic and generally densely glandular. Flowerheads form in solitaire or in small groups. Disk-like flower is sessile to long-peduncled. Corollas are white to yellow with anthers appearing black. Chaff scales are scattered and fused at base. Blooming period is generally from April to October. Hayfield tarweed is found in grasslands and serpentine soils in the Bay Area, the North and South Coast Ranges, Sacramento Valley, San Joaquin Valley and the Central Coast (JOI, 2006). *Hemizonia congesta* ssp. *congesta* is listed by EBCNPS as a rank B species; this subspecies is often indistinguishable from other subspecies of *Hemizonia congesta*. *Hemizonia congesta* ssp. *luzulifolia* was found on Northwest Meadow (S-1), EPA Meadows (S-3) and East Meadow (S-4); however, this subspecies is not ranked by EBCNPS.

## 3.1.17 Foxtail Barley



**Foxtail barley (*Hordeum jubatum*)** has been observed in Big Meadow (Drawing S-1). It is a perennial in the grass family (Poaceae). Stems can be bent at the base or erect and it is densely tufted. The leaf sheath is glabrous to hairy. The blade is generally less than 5 mm wide and is scabrous to tomentose. The flowering period is from May to July. Foxtail barley occurs in all floristic provinces of California in miscellaneous habitats and is listed by EBCNPS as rank A2 species.

## 3.1.18 Clustered toadrush



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**Clustered toadrush** (*Juncus bufonius* var. *congestus*), has been observed in Big Meadow (Drawing S-1). It is an annual in the rush family (Juncaceae). Flowers are crowded near slight coiled branch tips. Some lower flowers are generally solitary. Flowers have a four to seven mm perianth with acuminate petals. This subspecies is less common in the East Bay than Toad rush (*Juncus bufonius* ssp. *bufonius*) which also occurs at RFS. It is found in alkaline and salt marsh habitats in the San Francisco Bay Area, Sacramento and San Joaquin Valleys, Central Coast and Inner and Outer South Coast Ranges (JOI, 2006). It is ranked by EBCNPS as a C species.

## 3.1.19 Spreading brown-headed rush and Brown-headed rush



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**Spreading brown-headed rush (*Juncus phaeocephalus* var. *paniculatus*) and Brown-headed rush (*Juncus phaeocephalus* var. *phaeocephalus*)** have been observed in Big Meadow and Northwest Meadow (Drawing S-1), Eucalyptus Meadow (Drawing S-2), EPA and West Meadows (Drawing S-3). Because the two species were difficult to differentiate from each other in the field, they have been combined for the purposes of this report. Both species are perennials in the rush family (Juncaceae). They reach 10-50 cm in height and spread with creeping rhizomes. Stems are flat and leaf bases overlap. Sheath appendages are indistinct and leaf blades are flat with edges toward stem and have fine-pointed tips. Flowering period is from May to August. They are found in moist places in the San Francisco Bay Area, North coast, northern High Sierra Nevada, Central Coast, South Coast, northern Channel Islands, San Bernardino Mountains, Peninsular Ranges, and San Jacinto Mountains (JOI, 2006). Spreading brown-headed rush is ranked by EBCNPS as a C species; brown-headed rush is ranked by EBCNPS as a B species.

## 3.1.20 Purple needlegrass



**Purple needlegrass** (*Nassella pulchra*) has been observed in Big Meadow and Northwest Meadow (Drawing S-1), 580 and Eucalyptus Meadow and 580 Meadow (Drawing S-2), Central, West and EPA Meadows (Drawing S-3), and North and Northeast Meadows (Drawing S-4). It is a perennial in the grass family (Poaceae). Its stems are generally unbranched and inflorescence is panicle-like with branches generally widely spreading. Flowers are generally bisexual, minute and there are generally three stamens. Its blooming period is from March to May. The fruit is an achene-like grain. Purple needlegrass inhabits dry slopes, oak woodlands, chaparral, and grasslands up to an elevation of 1,300 m in the San Francisco Bay Area, North Coast, Klamath Ranges, High, Inner and Outer North Coast Ranges, northern and central Sierra Nevada Foothills, Sacramento Valley, Central Coast and Inner and Outer South Coast Ranges. It also occurs in Baja California and the Channel Islands (JOI, 2006). Purple needlegrass is ranked by EBCNPS as a C species.

## 3.1.21 Willow-leaved dock



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**Willow-leaved dock** (*Rumex salicifolius* var. *salicifolius*) has been observed in Big Meadow and Northwest Meadow (Drawing S-1), 580 Meadow (Drawing S-2), EPA and Central Meadows (Drawing S-3), and East and Northeast Meadows (Drawing S-4). It is a perennial herb in the buckwheat family (Polygonaceae). It is decumbent and leaf blades are linear to lanceolate. It is found in moist places, especially in coastal and montane areas up to an elevation of 1,000 m. The blooming period is from May to September. The flowers are creamy white and form in dense to open clusters, 15-30 cm in length. Willow-leaved dock is found throughout the California Floristic Province, including the White and Inyo Mountains. It also occurs in Nevada and Baja California (JOI, 2006). Limited populations are known to occur in Alameda and Contra Costa Counties and willow-leaved dock is ranked by EBCNPS as a B species.

## 3.1.22 Ladies-tresses



**Ladies-tresses** (*Spiranthes romanzoffiana*) has been observed in Big Meadow (Drawing S-1). It is a perennial terrestrial in the orchid family (Orchidaceae). The inflorescence is 2-14 cm long with bracts from 6-14 mm long. Flowers are spiral ranks, generally white and sometimes creamy with the upper sepal and lateral petals fused. Blooming period is generally June to August. Ladies-tresses are found on coastal bluffs, in wet meadows, freshwater marshes and seeps. It occurs in the San Francisco Bay Area, Northwestern California, the Cascade Range, Sierra Nevada, Central Coast, and the Modoc Plateau. It is also found up to Alaska, New Mexico and in the northeast of North America (JOI, 2006). Ladies-tresses have been identified at RFS and historically in the Oakland Hills (1887). It is ranked by EBCNPS as an A1 species.

3.1.23 *Ajuga* hedge nettle

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**Ajuga hedge nettle** (*Stachys ajugoides* ssp. *ajugoides*), has been observed in Big Meadow (Drawing S-1) and West Meadow (Drawing S-3). It is a perennial herb in the mint family (Lamiaceae). Stems generally four-angled and decumbent or erect. Leaf blades are tomentose, light green to gray-green and are oblong to ovate with serrate to crenate edges. The inflorescence is generally clustered around the stem in a spike-like or panicle-like formation. The tube-like flowers are white to pale pink and bloom from April to July. *Ajuga* hedge nettle inhabits moist open places in clay or serpentine soils, that often remain wet into summer, up to an elevation of 1,100 m. It occurs in the San Francisco Bay Area, Northwestern California, Central Western California and Southwestern California. It also occurs in the north and south Channel Islands and up to British Columbia (JOI, 2006). *Ajuga* hedge nettle is ranked by EBCNPS as an A2 species.

## 3.1.24 Wild hyacinth



**Wild hyacinth (*Triteleia hyacinthina*)** has been observed in the Big Meadow (Drawing S-1), EPA and West Meadows (Drawing S-3), and North Meadow (Drawing S-4). It is a perennial in the lily family (Liliaceae). Its leaves grow in a basal clump 10-40 cm long. Flowers are umbel-like. Papery-white petals have green veins and sometimes appear flushed with purple on outer petals. Long blooming period extends from summer to fall. Wild hyacinth is found in grasslands and vernal wet meadows up to an elevation of 2,000 m. They are found in the San Francisco Bay Area, Northwestern California, The Cascade Range, Sierra Nevada, the Great Central Valley and in Central Western California. It is also found up to British Columbia (JOI, 2006). It occurs in small populations in Alameda and Contra Costa Counties and is ranked by EBCNPS as a C species.

### 3.2 SENSITIVE PLANT COMMUNITIES

Plant communities are assemblages of plant species that occur together in the same area, which are defined by species composition and relative abundance. The identification of sensitive plant communities observed in the study area was based on the CDFG's document: *The Vegetation Classification and Mapping Program: List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database (CDFG, September 2003 Edition)*. This document supersedes all other lists of terrestrial natural communities developed by the California Department of Fish and Game. It is based on the classification put forth in *A Manual of California Vegetation* (Sawyer and Keeler-Wolf, 1995 and an upcoming new edition). One of the objectives of the *Manual of California Vegetation (MCV)* was to apply a uniform hierarchical structure to the State's vegetation types. Quantifiable classification rules were established to define the major floristic groups, called alliances and associations in the *National Vegetation Classification* (Grossman et al., 1998). This is the result of a large scale effort in the past decade by NatureServe ([www.natureserve.org](http://www.natureserve.org)), an international organization committed to developing standards for vegetation and species conservation and inventory in order to maintain a standard classification terminology for vegetation. To facilitate the understanding and inclusion of all of the vegetation of California into a broader view of national and international classification, the MCV adheres to the terminology of this international vegetation classification system and uses the term plant alliance instead of plant community.

The primary purpose of the CNDDDB classification is to assist in the location and determinations of significance and rarity of various vegetation types. Thus, ranking of natural communities by their rarity and threat is an important facet of the classification. Asterisks (\*) denote communities that are either known or believed to be rare and of high priority for inventory in CNDDDB. If an alliance is starred, this means that all of the associations within it will also be considered rare and of high inventory priority. All of the plants communities observed in the study area are identified by the CDFG as communities that are of high priority for being inventoried in the CNDDDB, and, hence, are considered to be sensitive communities for the purpose of this study.

Table 3-2 summarizes CDFG sensitive plant communities found in the entire study area during the botanical surveys. Their locations are shown on Drawings S-1 through S-4 (Appendix C).

The definition of the term plant alliance is similar to that of a plant community: The plant alliance is the basic, generic unit of floristic classification, usually identified by the dominant and/or characteristic plant species in the upper layer of vegetation. For example, in the Black Cottonwood Alliance, the cottonwood (*Populus balsamifera* ssp. *trichocarpa*) is conspicuous or predominant in the tree canopy. Although black cottonwood may co-occur with trees such as willows and maples, and numerous other shrubs and herbs, those other species typically cover less ground and are less characteristic of the alliance than cottonwood. Plant associations are smaller subgroups of the dominant plant(s) and other subdominant plants within a plant alliance.

**Table 3-2**  
**CDFG Sensitive Plant Communities in the Study Area (CDFG 2003)**

<b>Plant Community Name</b>	<b>Scientific Name(s)</b>	<b>Floristic Group</b>	<b>CNDDDB Designation*</b>
California Oatgrass Bunchgrass	<i>Danthonia californica</i>	Alliance	*41.050.00
Purple Needlegrass	<i>Nassella pulchra</i>	Alliance	*41.150.00
Saltgrass	<i>Distichlis spicata</i>	Alliance	*41.200.00

## 3.2.1 California Oatgrass Bunchgrass Alliance (CNDDB \*41.050.00)



It was determined that California oatgrass is present throughout the project area (Drawings S-1 through S-4). Due to its decumbent (mostly lying flat) habit, the oatgrass has been advantaged by mowing over other species. In areas that have not been mown, most native species including California oatgrass have been suppressed by non-native species such as Harding grass (*Phalaris aquatica*) or have slowly transitioned into Coastal Scrub by invasion of coyote brush (*Baccharis pilularis*). These areas occur in disturbed/undisturbed open grasslands both on poorly drained gently sloping and level mesic areas.

California oatgrass is well adapted to both wet soils and to mowing. It is a facultative wetland species and it is cleistogamous. Cleistogamy, which means that a plant produces a second set of hidden flowers near the ground inside the culm that never fully open and that are automatically self-fertilized, accounts for the species' excellent adaptability to intensive mowing.



## 3.2.2 Purple Needlegrass Grassland Alliance (CNDDDB \*41.150.00)



This rare grass alliance occurs in several areas adjacent to or within other grassland alliances. It is probably a remnant of the original Coastal Terrace Prairie habitat, which previously occupied the Project Area. Purple needlegrass is typically found in deep soils with high clay content. Stands of this once extensive alliance now often include non-native annual species mixed with the perennial grasses and herbs (MCV, 1995), rat's tail fescue (*Vulpia myuros*), six-weeks fescue (*Vulpia bromoides*), silver European hair grass (*Aira caryophyllea*), riggut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), and foxtail chess (*Bromus madritensis*) have been observed.

**3.2.3 Saltgrass Alliance (CNDDDB \*41.200.00)**

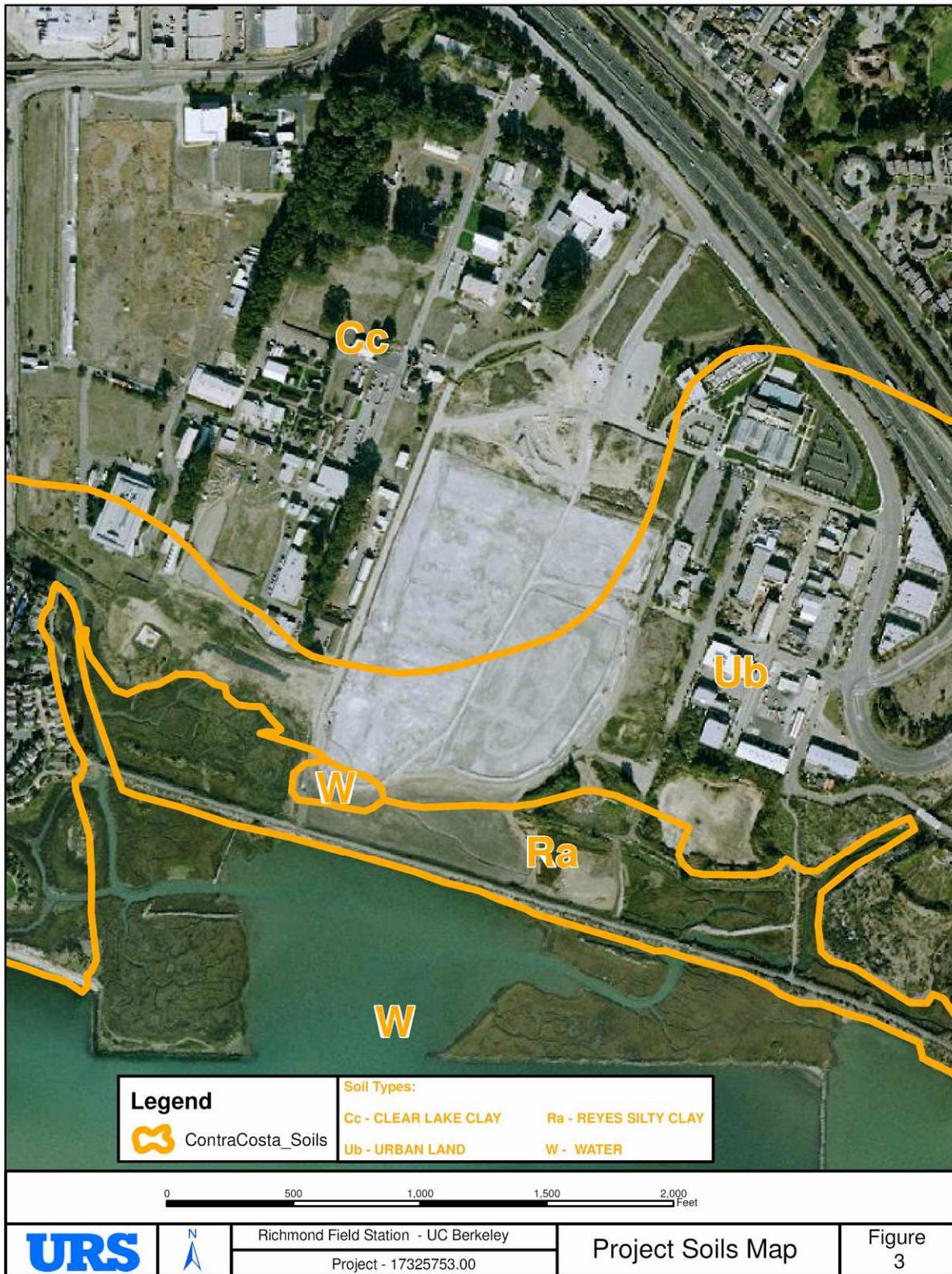
Saltgrass is typically found in temperate grassland with sparse shrub layer. Habitats can be irregularly flooded or permanently saturated with shallow water table in haline or saline water chemistry. Habitats include estuaries: along banks, berms and margins of bays and sandbars. Saltgrass is also found in estuarine intertidal persistent emergent haline wetlands and Palustrine persistent emergent saline wetlands (MCV, 1995).

### **3.3 SOIL DESCRIPTION AND SOIL DISTURBANCE IN THE STUDY AREA**

The Clear Lake-Cropley and Capay-Rincon soil types (Figure 3) in the study area are associated with the Clear Lake soil series (USDA-NRCS, 2006). These soils are typically very deep, poorly drained, and formed in fine textured alluvium derived from sandstone, shale, and native vegetation that generally consisted of grasses and forbs. Clear Lake soils are found in basins and in swales of drainageways with slopes that range between zero to two percent, with mean annual precipitation of about 20 inches. The study area has less than a 1% slope and represents an alluvium deposit close to the San Francisco Bay shore. The poorly drained clay soil often forms a perched water table in the winter rainy season. During the winter, water often stands for periods of a week or longer in wet swales. The grassland area west of the eucalyptus grove is at the original elevation that is approximately 10 feet above mean high tide. The old shore escarpment has been covered with broken concrete riprap and soil fill (Amme, 1993).

The study area that includes the 580, Central, East, Northeast, Eucalyptus, and North Meadows has a long history of industrial use and has been disturbed since the turn of the twentieth century.

The study area that includes the Northwest, West, EPA North, EPA South and Big Meadows was once the Leviston Estate. A road subdivision was built around 1910, complete with graded dirt roads, curbs and a sidewalk system. Historical aerial photographs indicated that small parcels were subdivided circa 1915, but no housing was ever completed. In addition, historical aerial photographs of this area do not indicate the presence of row crops or uniform cultivation. The vegetation is predominantly native and is rich in species diversity in spite of the shallow soil disturbance and scraping experienced in large portions of these areas (Amme, 1993).



### 3.4 SUMMARY AND CONCLUSIONS

#### 3.4.1 Big Meadow



Big Meadow (Drawing S-1) is approximately 13 acres and is located in the upper northeast portion of the study area. The Fog Buildings are on its west boundary, Regatta Blvd. on its north boundary, Avocet Way on its east boundary and Lark Drive to its south. It is composed primarily of coastal prairie grassland. It has been moderately disturbed due to subdivision work conducted in the early 1900s (Amme, 1993). Despite this historical disturbance, the coastal prairie is more or less intact. In addition to *Danthonia californica* var. *californica* and *Nassella pulchra*, 10 other EBCNPS Rank A or B plant species occur here.

##### **3.4.1.1 Conclusion/Analysis/Ranking**

Only a few remnant stands of coastal prairie remain in the greater East Bay area. These stands include isolated patches in Point Pinole Regional Park, the RFS, isolated hillsides in the Potrero Hills (Point Richmond), grazed grassland in the Wildcat Canyon watershed in Wildcat Regional

Park and on East Bay Municipal District lands above San Pablo reservoir (Edwards, 1991). Most of these stands are on well-drained upland soils. The grasslands on the RFS are unique and represent the only coastal prairie grasslands on lowland clay soils in the greater East Bay area (Amme, 1993).

Seventeen species of listed sensitive plants occur at this location, 10 of which are EBCNPS Rank A or B. In addition, the remnant coast prairie grassland in Big Meadow is largely undisturbed, is scientifically and ecologically invaluable, and is virtually impossible to recreate (Amme, 1993). Due to these factors, Big Meadow is designated as high quality grassland habitat.

### 3.4.2 Northwest Meadow



Northwest Meadow (Drawing S-1) is approximately three acres and is located in the northwest portion of the study area. Regatta Drive is its west and north boundaries, the Fog Buildings are its east boundary and Lark Drive is on its south boundary.

#### 3.4.2.1 Conclusion/Analysis/Ranking

Adjacent roadwork and building construction has somewhat disturbed this site. Seven listed plant species occur here (EBCNPS Rank A, B or C). In addition to *Danthonia californica* var. *californica* and *Nassella pulchra*, four EBCNPS Rank B plant species were observed. The criteria used for defining high quality grassland habitat were, therefore, not met.

### 3.4.3 Far North Meadow



Far North Meadow (Drawing S-2) is approximately one acre and is located in the northeastern corner of the study area, outside of the RFS boundary fence. Interstate 580 and a rail line are the northwest boundary, three RFS buildings are near its east boundary, and Eucalyptus Meadow is its south boundary. It is located in an area with a long history of industrial use and has been thoroughly disturbed since the turn of the twentieth century (URS, 2003). This meadow is overgrown with non-native herbaceous species and no listed plants were observed in this area.

#### **3.4.3.1 Conclusions/Analysis/Ranking**

This site has experienced extensive disturbance and no listed sensitive plants occur on the site. Due to these factors, this area does not constitute high quality grassland habitat.

## 3.4.4 580 Meadow



580 Meadow (Drawing S-2) is approximately two acres and is located in the far northeastern corner of the study area. A complex of buildings are along its west boundary, Interstate 580 and a rail line are the northeast boundary and Robin Drive is its south boundary. It is located in an area with a long history of industrial use and has been disturbed since the turn of the twentieth century (URS, 2003). This meadow is composed of regularly mown grassland, non-native plants with a few stands of Coyote bush (*Baccharis pilularis*). Aerial photographs show a small development in the northeast corner of the site.

#### 3.4.4.1 Conclusions/Analysis/Ranking

This site has experienced disturbance and four listed sensitive plants occur on the site. The site does not meet the operational definition of high quality grassland habitat, however, since only one EBCNPS Rank B plant species occurs in addition to *Danthonia californica* var. *californica* and/or *Nassella pulchra*. Due to these factors, this area is not designated as high quality grassland habitat.

### 3.4.5 Eucalyptus Meadow



Eucalyptus Meadow (Drawing S-2) is approximately five acres and is located in the northern portion of the study area. A eucalyptus grove forms the west boundary, Robin Drive is its north boundary, Egret Way is its east boundary and Wren Drive is its south boundary. This area is regularly mowed and has several structures, an access road bisecting the meadow and several small parking lots.

#### 3.4.5.1 Conclusions/Analysis/Ranking

This site has experienced disturbance and six listed sensitive plants occur on the site. The site does not meet the operational definition of high quality grassland habitat, however, since only three EBCNPS Rank A or B plant species occurs in addition to *Danthonia californica* var. *californica* and/or *Nassella pulchra*. Due to these factors, this area is not designated as high quality grassland habitat.

### 3.4.6 EPA Meadow N



EPA Meadow N (Drawing S-3) is approximately two acres and is located south of Big Meadow and north of the EPA Laboratory. EPA Meadow N is regularly mowed grassland with one small structure present on the site.

#### **3.4.6.1 Conclusions/Analysis/Ranking**

The grassland in EPA Meadow N is somewhat disturbed and 12 sensitive plant species occur at this location. In addition to *Danthonia californica* var. *californica* and *Nassella pulchra*, 6 other EBCNPS Rank A or B plant species occur here. Due to these factors, this area meets the operational definition of high quality grassland habitat.

## 3.4.7 EPA Meadow S



EPA Meadow S (Drawing S-3) is approximately one acre and is located south of the EPA Laboratory. EPA Meadow S is regularly mowed and the soils in this area have been partially disturbed in the past. *Danthonia californica* var. *californica* and *Nassella pulchra* occur on the site, and *Juncus phaeocephalus* (an EBCNPS Rank B species) occurs in proximity to the site.

**3.4.7.1 Conclusions/Analysis/Ranking**

Three species of sensitive plants occur at this location and the site has experienced disturbance. The site, therefore, does not meet the operational definition of high quality grassland habitat.

### 3.4.8 Central Meadow



Central Meadow (Drawing S-3) is composed of a 2.5-acre open area and a 0.3-acre open area, and it is located in the southern portion of the study area. Central Meadow lies between EPA Laboratory to the west and Egret Way to the east. It has been regularly mowed.

#### 3.4.8.1 Conclusions/Analysis/Ranking

This site has experienced disturbance because part of it was used as a staging area during the remediation project. In the 2.5-acre area, six EBCNPS listed sensitive plant occur. In addition to *Danthonia californica* var. *californica* and *Nassella pulchra*, 3 EBCNPS Rank B plant species occur here. Due to these factors, this area does not meet the operational definition of high quality grassland habitat. On the 0.3-acre area, two listed sensitive plants occur. As for the 2.5-acre area, this area does not meet the operational definition of high quality grassland habitat.

### 3.4.9 West Meadow



West Meadow (Drawing S-3) has an area of greater than four acres and is located west of EPA Meadow N and the EPA Laboratory. A concrete drainage ditch is on its west boundary, Lark Drive is on its north boundary, the EPA Laboratory service road on its east boundary and Meeker Slough is to the south. It is composed of both disturbed/exotic grassland and disturbed coastal prairie, with an isolated patch of minimally disturbed coastal prairie. A small concrete foundation is present in the middle of the site. Eleven species of EBCNPS listed sensitive plants occur in West Meadow. In addition to *Danthonia californica* var. *californica* and *Nassella pulchra*, 6 EBCNPS Rank A or B plant species occur here.

#### 3.4.9.1 Conclusions/Analysis/Ranking

West Meadow has some disturbance; nevertheless 11 species of sensitive plants occur at this location. The site meets the operational designation of high quality grassland habitat.

### 3.4.10 North Meadow



North Meadow (Drawing S-4) is approximately five acres and is located near the center of the study area. Owl Way forms its west boundary, Wren Drive its north boundary, Egret Way to the east and Crow Drive is to the south. This area is regularly mowed. While the site has experienced disturbance, six EBCNPS listed sensitive plants occur on the site.

#### 3.4.10.1 Conclusions/Analysis/Ranking

One EBCNPS Rank B plant species occurs in addition to *Danthonia californica* var. *californica* and/or *Nassella pulchra*. The site, therefore, does not meet the operational definition of high quality grassland habitat.

**3.4.11 Gull Meadow**

Gull Meadow (Drawing S-4) is approximately one acre and is located south of North Meadow, along Egret Way. Its few open areas are regularly mowed and the meadow has been disturbed by the construction of a small complex of structures and a parking lot. California oatgrass (*Danthonia californica*) and an isolated patch of small-bract sedge (*Carex subbracteata*) occur on the site.

**3.4.11.1 Conclusions/Analysis/Ranking**

This site has experienced extensive disturbance. Two listed sensitive plants occur on the site in limited numbers. The site does not meet the operational definition of high quality grassland habitat.

**3.4.12 Northeast Meadow**

Northeast Meadow (Drawing S-4) is approximately one acre and is located between North Meadow to the west and South 45<sup>th</sup> Street to the east. It is regularly mowed and has been disturbed. A parking lot, a several small structures and a large paved area are present on the site and topsoil in a portion of the site appears to have been removed. Four EBCNPS listed sensitive plants occur on the site.

**3.4.12.1 Conclusions/Analysis/Ranking**

In addition to *Danthonia californica* var. *californica* and *Nassella pulchra*, only one EBCNPS Rank B plant species occur here. The site, therefore, does not meet the operational definition of high quality grassland habitat.

### 3.4.13 East Meadow



East Meadow (Drawing S-4) is approximately one acre and is located south of Northeast Meadow along South 45<sup>th</sup> Street. It is regularly mowed and has been disturbed with the construction of a parking lot, and two structures. Four EBCNPS listed sensitive plants occur on the site.

#### **3.4.13.1 Conclusions/Analysis/Ranking**

In addition to *Danthonia californica* var. *californica*, three EBCNPS Rank B plant species occur here. The site, therefore, does not meet the operational definition of high quality grassland habitat.

### 3.5 OTHER RECOMMENDATIONS

#### 3.5.1 Grassland Maintenance

Long-term maintenance of the high quality grasslands will be necessary. Site-specific problems will arise from time to time: certain aggressively competitive introduced weeds are often the major problem (such as Harding grass [*Phalaris aquatica*]) at the RFS. Periodic monitoring to detect and remove undesired species before they proliferate in the landscape will decrease later labor and deterioration of the habitats.

##### 3.5.1.1 Mowing Schedules

In order for the coastal terrace prairies to thrive, it is not essential that the prairies are completely weed-free, but that competition between native (generally perennials) and non-native (generally annuals) plants is reduced in order to enhance native plant vigor. The most effective and efficient maintenance for grasslands involves proper mowing schedules.

Effective mowing will allow native perennials to remain in sunlight while limiting consumption of water and nutrients by non-native annuals. High mowing maintains native grass in a vigorous condition and encourages rapid green-up of native perennials. Mowing also simulates grazing if thatch is removed. This encourages plant growth and promotes basal and fertile tillering (the production of new shoots from the roots), and results in greater seed production. Proper mowing also maximizes weed suppression by preventing seed production by non-native annual grasses and other taller weeds if they are mown before their flowering period (DAWN, 1985).

**Mowing Height:** A mowing height of 6” to 8” is recommended. At this height, slow-growing perennials will remain mostly untouched while annuals (which would otherwise shade out native perennials) will be temporarily stunted or killed.

**Spring Mowing:** The sites will require mowing once during the early spring season (late March). Additional mowing will be required in late April or early May in the event of late spring rains.

**Summer Mowing:** Additional mowing is also needed for irrigated sites, as another crop of weeds will grow during the summer. Summer mowing is also employed to keep the grassland more presentable and to prevent fire hazards.

##### 3.5.1.2 Weed Control

Several noxious species may be encountered in coastal situations. These include Harding grass (*Phalaris aquatica*), sweet fennel (*Foeniculum vulgare*), French broom (*Cytisus monspeliensis*), poison hemlock (*Conium maculatum*), Kikuyu grass (*Pennisetum clandestinum*), and Bermuda grass (*Cynodon dactylon*). Young fennel plants, broom, and hemlock can be effectively removed by severing the plant under the root crown with a pulaski or shovel (DAWN, 1985). Mature Harding grass, fennel, Kikuyu grass and Bermudagrass are very

difficult to control by mechanical means and are most effectively killed by brushing or wicking with herbicides such as glyphosate after mowing.



**LEGEND**

- GRASSLAND HABITATS WITH CALIFORNIA OATGRASS AND PURPLE NEEDLEGRASS AND SIX OR MORE OTHER SENSITIVE PLANTS (EBCNPS RANK A OR B)
- SENSITIVE GRASS SPECIES CALIFORNIA OATGRASS AND PURPLE NEEDLEGRASS
- OTHER SENSITIVE PLANT SPECIES (EBCNPS RANK A OR B)



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 THEN DRAWING IS NOT TO SCALE



1333 Broadway, Suite 800  
 OAKLAND, CA 94612  
 Tel: (510) 893-3600  
 Fax: (510) 874-3268



DESIGNED	GS
DRAWN	MC
CHECKED	CS
PEER REVIEWED	EJK
PROJECT MANAGER	CS
DATE	06/25/2007

**RICHMOND FIELD STATION**  
 GRASSLAND HABITATS WITH SIMULTANEOUS  
 OCCURRENCE OF CALIFORNIA OATGRASS,  
 PURPLE NEEDLEGRASS  
 AND SIX OR MORE OTHER SENSITIVE PLANT  
 SPECIES (EBCNPS RANK A OR B)

REVISION	A
PROJECT	17325753
DRAWING	Figure 4

Amme, David & Associates. November 16, 1993. Richmond Research Center Master Plan. Environmental Impact Report: Existing Conditions of Grassland Resources.

BBL, Inc. January 2004. Invasive/Exotic Vegetation Management Program. University of California, Berkeley, Richmond Field Station.

Brady & Associates Planners and Landscape Architects. January 28, 1994. Richmond Research Center Master Plan. Environmental Impact Report. Existing Opportunities and Constraints Report.

California Department of Fish and Game. September 2003. Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities.

California Department of Fish and Game. September 2003. The Vegetation Classification and Mapping Program: List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database.

California Native Plant Society (CNPS). 1995. A Manual of California Vegetation.

California Native Plant Society (CNPS). 2006. Inventory of Rare and Endangered Plants. Version 7-06c 7-11-06.

California Native Plant Society (CNPS). 2001. Inventory of rare and endangered plants of California (sixth edition). Rare Plant Scientific Advisory Committee, David P. Tibor, Convening Editor. California Native Plant Society, Sacramento, CA.

California Natural Diversity Data Base (CNDDB). February 2003. Review of records from the Richmond, Mare Island, San Quentin, Oakland West and San Leandro 7.5-minute quadrangles and a CNDDB search using a 10-mile radius around the Study Area and excluding Marin County. California Department of Fish and Game, Natural Heritage Division. Sacramento, CA.

DAWN. December 20, 1985. Coastal Landscapes: A Case Study and Guidelines for Design and maintenance of Native plant Landscapes in Shoreline Parks.

East Bay Chapter, California Native Plant Society (EBCNPS). Lake, Diane, Editor. March 1, 2004. Rare, Unusual and Significant Plants of Alameda and Contra Costa Counties (Seventh Edition).

Echols, Lee. 2003. Personal communication between George Strnad, URS Senior Restoration Ecologist and Lee Echols, Botanist.

Edwards, Stephen W. and Alysya Galo. December 27, 1991. Rare, Endangered, and Unusual Plants in the East Bay Regional Park District. *Four Seasons*, Vol. 9, No. 1, pp. 59-71.

Ertter 2002. Richmond Field Station Plant List. Plants confirmed as present in wet meadow community & mowed grassland. 2002. Prepared by Barbara Ertter.

Gutstein, Joyce. Spring 1989. The Natural Areas of the University of California Richmond Field Station.

Hickman, J.C., (Ed.) 1993. The Jepson Manual: Higher Plants of California. University of California Press, Berkeley, California.

Jepson Online Interchange (JOI). 2006. <http://ucjeps.berkeley.edu/interchange>

Lidicker, W.Z., B. Ertter, and B.G. Baldwin. 2003. Flowering Plants of the Richmond Field Station University of California, Berkeley. Taken from J.A. Powell's compilation in 1992, and updated February 2003.

Powell, J.A. 1994. Richmond Field Station Lepidoptera (list of species). Essig Museum of Entomology, University of California, Berkeley.

Sawyer, J.O. and T. Keeler-Wolf. 1995. A Manual of California Vegetation. California Native Plant Society. Sacramento, CA.

Stafford, Monica. 2006. Plants confirmed as present in the coastal terrace prairie of Richmond Field Station.

United States Department of Agriculture – Natural Resources Conservation Service (USDA-NRCS). 2006. [http://www2.ftw.nrcs.usda.gov/osd/dat/C/CLEAR\\_LAKE.html](http://www2.ftw.nrcs.usda.gov/osd/dat/C/CLEAR_LAKE.html).

URS Corporation. May 28, 2003. Richmond Field Station Remediation Project. Initial Study California Environmental Quality Act.

Wrynski, J. 2000. Know your natives: a pictorial guide to California native grasses. Prepared for the Yolo County Resource Conservation District, Woodland, California.

**APPENDIX A**  
**Plants at the Richmond Field Station**

Scientific Name	Common Name	CA Native or Non-Native	Big Mdw (Preserve)	NW Mdw	Euc. Mdw	580 Mdw	Far N Mdw	Central Mdw	EPA Mdw	West Mdw	East Mdw	Gull Mdw	North Mdw	NE Mdw
<i>Acacia melanoxylon</i>	blackwood acacia	non-native	X					X		X			X	X
<i>Agrostis</i> sp.	bentgrass							X						
<i>Aira caryophylla</i>	silver hairgrass	non-native	X		X		X	X	X	X	X		X	X
<i>Allium triquetrum</i> (cepa?)	white-flowered onion	non-native			X								X	
<i>Alysum alysoides</i>	sweet alysum	non-native												
<i>Amsinckia menziesii</i> var. <i>intermedia</i>	common fiddleneck	native						X						
<i>Anagallis arvensis</i>	scarlet pimpernel	non-native	X		X	X	X	X	X	X			X	X
<i>Arctotheca calendula</i>					X									
<i>Artemisia douglasiana</i>	mugwort	native	X											
<i>Aster chilensis</i>	California aster	native	X					X		X				
<i>Avena barbata</i>	slender wild oats	non-native	X	X	X		X	X		X	X		X	
<i>Avena fatua</i>	wild oats	non-native	X		X		X	X		X				X
<i>Baccharis pilularis</i>	coyote bush	native	X	X		X	X		X	X				X
<i>Bellardia trixago</i>	Mediterranean linseed	non-native						X	X				X	
<i>Brassica nigra</i>	black mustard	non-native	X					X						
<i>Brassica rapa</i>	field mustard	non-native			X		X	X						
<i>Briza minor</i>	little rattlesnake grass	non-native						X		X			X	
<i>Brodiaea elegans</i> ssp. <i>elegans</i>	harvest brodiaea	native						X						
<i>Bromus carinatus</i>	California brome	native								X				
<i>Bromus catharticus</i>	rescue grass	non-native			X						X			
<i>Bromus diandrus</i>	ripgut brome	non-native	X	X	X	X	X	X	X	X			X	X
<i>Bromus hordeaceus</i>	soft chess	non-native	X	X	X	X		X	X	X	X		X	X
<i>Bromus madritensis</i> ssp. <i>madritensis</i>	foxtail chess	non-native			X	X		X		X	X		X	
<i>Bromus madritensis</i> ssp. <i>rubens</i>	red brome	non-native			X		X	X		X	X		X	
<i>Bromus stamineus</i>	roadside brome	non-native			X	X	X	X	X	X			X	X
<i>Calandrinia ciliata</i>	red maids	native			X			X					X	
<i>Callitriche heterophylla</i>	water starwort	native							X					

Scientific Name	Common Name	CA Native or Non-Native	Big Mdw (Preserve)	NW Mdw	Euc. Mdw	580 Mdw	Far N Mdw	Central Mdw	EPA Mdws	West Mdw	East Mdw	Gull Mdw	North Mdw	NE Mdw
<i>Calystegia subacaulis</i> ssp. <i>subacaulis</i>	chaparral false bindweed	native	X											
<i>Camissonia ovata</i>	sun cup	native	X		X	X		X	X	X			X	
<i>Cardamine californica</i>	milk maids	native	X											
<i>Carduus pycnocephalus</i>	Italian thistle	non-native	X		X		X	X					X	
<i>Carex densa</i>	sedge	native	X							X				
<i>Carex subbracteata</i>	small-bract sedge	native	X					X	X		X	X	X	X
<i>Carex tumulicola</i>	foothill (Berkeley) sedge	native											X	
<i>Carpobrotus chilensis</i>	iceplant	non-native		X			X			X				
<i>Carpobrotus edulis</i>	iceplant	non-native					X	X						
<i>Castilleja exserta</i> ssp. <i>exserta</i>	purple owl's clover	native	X											
<i>Ceanothus</i> sp. (planted)	ceanothus	native or non-native												X
<i>Centaurea solstitialis</i>	yellow star-thistle	non-native	X											
<i>Centranthus ruber</i>	red valerian	non-native	X											
<i>Centunculus minimus</i>	false pimpernel	native							X					
<i>Cerastium glomeratum</i>	mouse-ear chickweed	non-native			X			X					X	
<i>Cercis occidentalis</i>	Western redbud	native (hort.)												
<i>Chamaesyce maculata</i>	spotted spurge	non-native			X					X				
<i>Chamomilla suaveolens</i>	pineapple weed	non-native	X		X			X						X
<i>Chenopodium</i> sp.								X						
<i>Cicendia quadrangularis</i>	Oregon timwort	native	X	X				X	X	X				
<i>Cichorium intybus</i>	chicory	non-native	X											
<i>Cirsium vulgare</i>	bull thistle	non-native	X					X					X	
<i>Claytonia perfoliata</i> ssp. <i>perfoliata</i>	miner's lettuce	native						X					X	
<i>Contoneaster</i> sp.	contoneaster	non-native	X					X					X	

Scientific Name	Common Name	CA Native or Non-Native	Big Mdw (Preserve)	NW Mdw	Euc. Mdw	580 Mdw	Far N Mdw	Central Mdw	EPA Mdw	West Mdw	East Mdw	Gull Mdw	North Mdw	NE Mdw
<i>Cotoneaster pannosus</i>	silverleaf cotoneaster	non-native					X	X		X			X	
<i>Convolvulus arvensis</i>	bindweed	non-native			X		X	X		X			X	X
<i>Conium maculatum</i>	poison hemlock	non-native						X						
<i>Conyza canadensis</i>	horseweed	native or non-native	X										X	
<i>Conyza bonariensis</i>	South American horseweed	non-native			X			X					X	
<i>Coronopus didymus</i>	wart cress	non-native	X					X						
<i>Cortaderia jubata</i>	pampas grass	non-native	X		X			X		X	X		X	X
<i>Cotula australis</i>	Australian brass button	non-native	X		X					X			X	
<i>Cotula coronopifolia</i>	brass-buttons	non-native	X						X					
<i>Crassula tillaea</i>	pygmy stonecrop	non-native												
<i>Cupressus macrocarpus</i>	Monterey cypress	non-native												
<i>Cuscuta salina</i> var. <i>major</i>	salt marsh dodder	native		X										
<i>Cynara cardunculus</i>	artichoke thistle	non-native	X					X					X	
<i>Cynodon dactylon</i>	Bermuda grass	non-native				X								
<i>Cyperus eragrostis</i>	tall flatsedge	native			X	X	X	X	X	X	X		X	X
<i>Dactylis glomerata</i>	orchard grass	non-native						X	X					
<i>Danthonia californica</i> var. <i>californica</i>	California oatgrass	native	X	X	X	X		X	X	X	X	X	X	X
<i>Deinandra corymbosa</i> ssp. <i>corymbosa</i>	coastal tarweed	native			X				X					
<i>Dichondra donelliana</i>	California ponysfoot	native			X									
<i>Dipsacus fullonum</i>	teasel	non-native	X	X					X	X				
<i>Dipsacus sativus</i>	teasel	non-native			X		X						X	
<i>Distichlis spicata</i>	saltgrass	native						X						
<i>Ehrharta erecta</i>	Stebbins' grass	non-native			X	X			X					
<i>Eleocharis macrostachya</i>	common spikerush	native							X	X				
<i>Elymus hansenii</i>	Hansen's wildrye	native	X											
<i>Elymus multisetus</i>	big squirreltail	native	X						X	X				

Scientific Name	Common Name	CA Native or Non-Native	Big Mdw (Preserve)	NW Mdw	Euc. Mdw	580 Mdw	Far N Mdw	Central Mdw	EPA Mdws	West Mdw	East Mdw	Gull Mdw	North Mdw	NE Mdw
<i>Elymus trachycaulus</i> ssp. <i>trachycaulus</i>	slender wheatgrass	native	X							X				
<i>Epilobium brachycarpum</i>	panicked willowherb	native	X		X		X	X			X		X	X
<i>Epilobium ciliatum</i>	willow herb	native												
<i>Eriophyllum staechadifolium</i>	seaside woolly sunflower	native	X											
<i>Erodium botrys</i>	long-beaked filaree	native	X		X		X						X	
<i>Erodium cicutarium</i>	red-stemmed filaree	non-native	X		X			X						
<i>Eryngium armatum</i>	coyote thistle	native	X							X				
<i>Eschscholzia californica</i>	California poppy	native			X	X	X	X						
<i>Eucalyptus globulus</i>	blue gum eucalyptus	non-native			X						X			
<i>Eucalyptus polyanthemos</i>	silver dollar eucalyptus	non-native			X									
<i>Euphorbia</i> sp. (observed 3 species at project area)	spurge	non-native			X		X	X					X	
<i>Euphorbia peplus</i>	petty spurge	non-native					X							
<i>Festuca arundinacea</i>	giant fescue	non-native			X	X								
<i>Festuca idahoensis</i>	Idaho fescue	native (hort.)			X				X	X				
<i>Filago gallica</i>	Mediterranean herba impia	non-native			X			X		X			X	
<i>Foeniculum vulgare</i>	sweet fennel	non-native		X	X	X	X	X	X	X	X			
<i>Galium aparine</i>	goose grass	native			X	X								
<i>Gastridium ventricosum</i>	nit grass	non-native												
<i>Genista monspessulana</i>	French broom	non-native			X									
<i>Geranium carolinianum</i>	Carolina geranium	non-native			X	X					X			
<i>Geranium dissectum</i>	cutleaf geranium	non-native				X	X	X	X	X	X			X
<i>Geranium molle</i>	dove's-foot geranium	non-native	X			X	X							
<i>Gnaphalium luteoalbum</i>	cudweed	non-native	X		X		X	X	X		X			X

Scientific Name	Common Name	CA Native or Non-Native	Big Mdw (Preserve)	NW Mdw	Euc. Mdw	580 Mdw	Far N Mdw	Central Mdw	EPA Mdws	West Mdw	East Mdw	Gull Mdw	North Mdw	NE Mdw
<i>Gnaphalium canescens</i> ssp. <i>beneolens</i>	fragrant everlasting	native	X											
<i>Gnaphalium purpureum</i>	purple cudweed	native			X									X
<i>Grindelia hirsutula</i> var. <i>hirsutula</i>	gumplant	native	X	X					X	X				
<i>Hemizonia congesta</i>	hayfield tarplant	native	X											
<i>Hemizonia congesta</i> ssp. <i>luzulifolia</i>	hayfield tarplant	native		X					X		X			
<i>Hemizonia corymbosa</i>	tarplant	native												
<i>Heteromeles arbutifolia</i>	toyon	native	X		X					X				
<i>Heterotheca bolanderi</i>	golden aster	native	X	X					X					
<i>Hirschfeldia incana</i>	short pod mustard	non-native	X											
<i>Hordeum jubatum</i>	foxtail barley	native	X											
<i>Hordeum marinum</i> ssp. <i>gussoneanum</i>	Mediterranean barley	non-native	X		X	X		X	X		X			X
<i>Hordeum murinum</i> ssp. <i>leporinum</i>	foxtail barley	non-native	X		X	X	X	X			X		X	X
<i>Hypochaeris glabra</i>	smooth cat's-ears	non-native	X			X			X		X			X
<i>Hypochaeris radicata</i>	rough cat's-ears	non-native	X		X			X	X	X	X			X
<i>Juncus acuminatus</i>	rush	native								X				
<i>Juncus balticus</i>	Baltic rush	native						X						
<i>Juncus bufonius</i> var. <i>bufonius</i>	toad rush	native	X		X			X	X	X	X		X	X
<i>Juncus bufonius</i> var. <i>congestus</i>	clustered toadrush	native	X											
<i>Juncus capitatus</i>	capitate rush	native		X										
<i>Juncus occidentalis</i>	western rush	native	X		X	X		X	X		X			X
<i>Juncus patens</i>	round headed rush	native	X						X					
<i>Juncus phaeocephalus</i> var. <i>paniculatus</i> / <i>Juncus phaeocephalus</i> var. <i>phaecephalus</i>	spreading brown-headed rush	native	X	X	X				X	X				

Scientific Name	Common Name	CA Native or Non-Native	Big Mdw (Preserve)	NW Mdw	Euc. Mdw	580 Mdw	Far N Mdw	Central Mdw	EPA Mdw	West Mdw	East Mdw	Gull Mdw	North Mdw	NE Mdw
<i>Lactuca serriola</i>	prickly lettuce	non-native	X		X		X	X					X	
<i>Lathyrus vestitus</i> var. <i>vestitus</i>	common Pacific pea	native			X									
<i>Lepidium latifolium</i> .	water pepperweed		X											
<i>Lepidium nitidum</i> var. <i>nitidum</i>	shining pepperweed	native						X						
<i>Linum bienne</i>	narrowleaf flax	non-native				X	X	X	X	X	X			X
<i>Lolium multiflorum</i>	Italian ryegrass	non-native			X			X	X	X	X		X	X
<i>Lolium perenne</i>	ryegrass	non-native			X									X
<i>Lotus corniculatus</i>	birdsfoot trefoil	non-native	X		X		X	X	X	X	X		X	X
<i>Loyus humistratus</i>	trefoil	non-native	X											
<i>Lotus purshianus</i> var. <i>purshianus</i>	Spanish clover	native	X				X	X			X		X	
<i>Lotus wrangelianus</i>	calf lotus	native	X											
<i>Lupinus albifrons</i>	silver bush lupine	native					X							
<i>Lupinus bicolor</i>	miniature lupine	native			X		X		X					X
<i>Lupinus formosus</i> var. <i>formosus</i>	summer lupine	native	X		X									
<i>Lupinus nanus</i>	sky lupine	native							X					
<i>Lythrum hyssopifolium</i>	hyssop loosestrife	non-native	X		X		X	X	X	X	X		X	X
<i>Madia gracilis</i>	slender tarweed	native		X	X			X	X				X	
<i>Madia sativa</i>	coast tarweed	native	X	X	X			X		X				X
<i>Malva nicaensis</i>	bull mallow	non-native			X		X		X	X	X			
<i>Malva parviflora</i>	cheeseweed	non-native	X	X						X				
<i>Malvella leprosa</i>	alkali mallow	native	X							X				
<i>Medicago polymorpha</i>	California burclover	non-native	X		X	X	X	X	X		X		X	X
<i>Melilotus alba</i>	white sweetclover	non-native	X										X	
<i>Melilotus indica</i>	sour clover	non-native	X		X			X						
<i>Myrica californica</i> (planted)	wax murtle	native		X										X
<i>Nassella pulchra</i>	purple needlegrass	native	X	X	X	X		X	X	X			X	X
<i>Olea europea</i>	olive	non-native								X				
<i>Opuntia</i> sp.	pricklypear	non-native (hort.)					X	X						

Scientific Name	Common Name	CA Native or Non-Native	Big Mdw (Preserve)	NW Mdw	Euc. Mdw	580 Mdw	Far N Mdw	Central Mdw	EPA Mdw	West Mdw	East Mdw	Gull Mdw	North Mdw	NE Mdw
<i>Oxalis pes-carpae</i>	Bermuda buttercup	non-native			X	X	X						X	
<i>Parapholis incurva</i>	Sickle grass	non-native							X		X			
<i>Paspalum dilatatum</i>	Dallis grass	non-native			X			X		X			X	X
<i>Pentagramma triangularis</i> ssp. <i>triangularis</i>	gold-back fern	native	X											
<i>Phalaris aquatica</i>	Harding grass	non-native	X	X	X	X		X	X	X	X		X	X
<i>Picris echioides</i>	bristly ox-tongue	non-native	X		X		X	X	X	X	X		X	X
<i>Pinus radiata</i>	Monterey pine	native					X			X				X
<i>Plantago coronopus</i>	cut-leaf plantain	non-native			X			X						
<i>Plantago erecta</i>	native plantain	native	X	X										
<i>Plantago lanceolata</i>	English plantain	non-native		X	X		X	X	X	X	X		X	
<i>Poa annua</i>	annual bluegrass	non-native	X		X	X	X	X		X				
<i>Poa pratensis</i>	Kentucky bluegrass	non-native			X									X
<i>Polygonum arenastrum</i>	common knotweed	non-native	X					X		X	X		X	X
<i>Polygonum lapathifolium</i>	willow weed	native												
<i>Polypogon interruptus</i>	rabbitsfoot grass	non-native	X											
<i>Polypogon monspeliensis</i>	rabbitsfoot grass	non-native	X					X						
<i>Portulaca oleracea</i>	common purslane	non-native						X						
<i>Prunus sp. (pear)</i>	pear	non-native	X											
<i>Prunus armeniaca</i>	apricot	non-native						X						
<i>Pseudotsuga menziesii</i>	Douglas fir	native (hort.)												X
<i>Pyracantha</i> sp.	firethorn	non-native								X				
<i>Quercus agrifolia</i>	coast live oak	native				X								X
<i>Ranunculus californicus</i>	California buttercup	native	X	X	X				X	X			X	
<i>Raphanus raphinatsrum</i>	wild radish	non-native						X		X				
<i>Raphanus sativus</i>	wild radish	non-native	X	X			X			X	X			X
<i>Rhamnus californica</i>	coffeeberry	native					X							
<i>Ricinus communis</i>	castor bean	non-native	X											

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<i>Rubus discolor</i>	Himalayan blackberry	non-native	X			X		X	X	X	X			X
<i>Rumex acetosella</i>	sheep sorrel	non-native	X		X	X	X	X		X	X		X	X
<i>Rumex crispus</i>	curly dock	non-native	X	X	X		X	X		X			X	X
<i>Rumex pulcher</i>	dock	non-native	X		X			X	X	X	X			X
<i>Rumex salicifolius</i> var. <i>salicifolius</i>	willow dock	native	X	X		X		X	X		X			X
<i>Rumex salicifolius</i> var. <i>transitorius</i>	willow dock	native							X					
<i>Salicornia virginica</i>	pickleweed	native	X	X			X							
<i>Salsola soda</i>	alkali Russian thistle	non-native	X				X							
<i>Salsola tragus</i>	Russian thistle	non-native		X										
<i>Schinus molle</i>	Peruvian pepper tree	non-native								X				
<i>Scirpus robustus</i>	alkali bulrush	native												
<i>Scrophularia californica</i> ssp. <i>floribunda</i>	California figwort	native	X											
<i>Senecio vulgaris</i>	common groundsel	non-native	X		X	X	X	X					X	X
<i>Silene gallica</i>	common catchfly	non-native			X			X					X	X
<i>Silybum marianum</i>	milk thistle	non-native	X		X		X	X						
<i>Sisyrinchium bellum</i>	blue-eyed grass	native	X		X	X			X	X	X		X	
<i>Solanum</i> sp.	nightshade	native						X						
<i>Soliva sessilis</i>	South American soliva	non-native			X									
<i>Sonchus asper</i> ssp. <i>asper</i>	prickly sow thistle	non-native	X		X		X	X	X	X	X		X	X
<i>Sonchus oleraceus</i>	common sow thistle	non-native	X				X	X					X	
<i>Spergula arvensis</i> ssp. <i>arvensis</i>	stickwort	non-native												
<i>Spiranthes romanzoffiana</i>	ladies-tresses	native	X											
<i>Spergularia macrotheca</i> var. <i>macrotheca</i>	sticky sandspurry	native			X									
<i>Stachys ajugoides</i> var. <i>ajugoides</i>	hedgenettle	native	X							X				

Scientific Name	Common Name	CA Native or Non-Native	Big Mdw (Preserve)	NW Mdw	Euc. Mdw	580 Mdw	Far N Mdw	Central Mdw	EPA Mdws	West Mdw	East Mdw	Gull Mdw	North Mdw	NE Mdw
<i>Stachys ajugoides</i> var. <i>rigida</i>	rigid hedge-nettle	native	X							X				
<i>Stellaria media</i>	common chickweed	native			X	X								X
<i>Sisyrinchium bellum</i>	blue-eyed grass	non-native	X							X				
<i>Taraxacum officinale</i>	dandelion	non-native											X	
<i>Torilis nodosa</i>	torilis	non-native			X									X
<i>Tragopogon porrifolius</i>	salsify	non-native	X							X				
<i>Toxicodendron diversilobum</i>	poison oak	native			X								X	X
<i>Trifolium dubium</i>	hop clover	non-native	X					X	X					
<i>Trifolium fragiferum</i>	strawberry clover	non-native												X
<i>Trifolium hirtum</i>	rose clover	non-native			X			X	X					
<i>Trifolium repens</i>	creeping clover	non-native												X
<i>Trifolium subterraneum</i>	subterranean clover	non-native			X	X				X				
<i>Triglochin concinna</i> var. <i>concinna</i>	slender arrow-grass	native		X										
<i>Triphysaria pusilla</i>	little owl's clover	native			X			X					X	X
<i>Triteleia hyacinthina</i>	white brodiaea	native	X						X	X			X	
<i>Triteleia laxa</i>	Ithuriel's spear	native			X									
<i>Typha angustifolia</i>	narrow-leaved cattail	native		X										
<i>Typha latifolia</i>	broad-leaved cattail	native		X										
<i>Umbellularia californica</i>	California bay	native (hort.)			X									
<i>Verbascum thapsus</i>	mullein	non-native	X											
<i>Veronica</i> sp.	speedwell	native or non-native												X
<i>Vicia sativa</i> ssp. <i>sativa</i>	spring vetch	non-native		X		X	X	X	X	X	X		X	X
<i>Vicia villosa</i> ssp. <i>varia</i>	winter vetch	non-native						X			X			
<i>Vulpia myuros</i> ssp. <i>bromoides</i>	six-weeks fescue	non-native	X	X	X	X		X	X	X	X		X	X

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<i>Vulpia myuros</i> ssp. <i>myuros</i>	zorro grass	non-native	X	X	X	X		X	X	X	X		X	X
<i>Wyethia angustifolia</i>	narrow mules ear	native	X	X						X				

**APPENDIX B**

**Inventory of Special-Status Plant Species with a Potential to  
Occur in the Richmond Field Station Vicinity**

Scientific Name	Common Name	Special Status				Supporting Habitat <sup>e</sup>	Flowering		Potential to Occur in the Project Area <sup>f</sup>
		Federal <sup>a</sup>	State <sup>b</sup>	CNPS <sup>c</sup>	Local <sup>d</sup>		Start month	End month	
<i>Abronia latifolia</i>	yellow sand verbena	-	-	-	A1x	Coastal strand, coastal dunes, coastal scrub	5	10	Low; presumed extirpated in Alameda and Contra Costa Counties (EBCNPS, 2001).
<i>Abronia umbellata</i> ssp. <i>umbellata</i>	pink sand verbena	-	-	-	A1x	Coastal strand, coastal dunes, disturbed sandy areas, scrub	7	10	Low; presumed extirpated in Alameda and Contra Costa Counties (EBCNPS, 2001).
<i>Ambrosia chamissonis</i>	silver beach-weed	-	-	-	A2	Coastal strand, sand or sandstone, limited threatened coastal habitat.	7	11	Low; no suitable habitat in project area (But known to occur at RFS (Lidicker et al., 2003).
<i>Amsinckia lunaris</i>	bent-flowered fiddleneck	SLC	-	1B	*A2	Cismontane woodland, valley and foothill grassland, coastal bluff scrub	3	6	Low, not known in vicinity.
<i>Arabis blepharophylla</i>	coast rock cress	SLC	-	4	*A1	Broadleaved upland forest, coastal bluff scrub, coastal prairie, coastal scrub, rock, scree, tallus, limited range in East Bay	2	5	Moderate; known at Pt. Molate/Richmond area (Mlt) at Red Rock Island (EBCNPS, 2001).
<i>Artemisia pycnocephala</i>	beach sage, sandhill sage, coast sagebrush	-	-	-	A1x	Coastal strand, sand or sandstone, limited threatened coastal habitat, presumed extirpated	6	8	Low; presumed extirpated in Alameda and Contra Costa Counties (EBCNPS, 2001).
<i>Aster chilensis</i>	marsh aster	-	-	-	D	Salt marshes, grasslands, disturbed places	6	11	High; observed at RFS (Lidicker et al., 2003; Ertter, 2002; Powell, 1992).
<i>Aster frondosus</i>	leafy rayless aster	-	-	-	A1x	Alkali areas, freshwater marshes, salt marshes, miscellaneous wetlands, presumed extirpated	5	10	Low; presumed extirpated in Alameda and Contra Costa Counties (EBCNPS, 2001).
<i>Aster lentus</i>	Suisun Marsh aster	SC	-	1B	*A2	Brackish and freshwater marshes, most often seen along sloughs with <i>Phragmites australis</i> , <i>Scirpus</i> sp., <i>Typha</i> sp., <i>Rubus</i> sp., etc.	5	11	Low; endemic to Sacramento/San Joaquin River Delta (CNDDDB, 2002).

Scientific Name	Common Name	Special Status				Supporting Habitat <sup>e</sup>	Flowering		Potential to Occur in the Project Area <sup>f</sup>
		Federal <sup>a</sup>	State <sup>b</sup>	CNPS <sup>c</sup>	Local <sup>d</sup>		Start month	End month	
<i>Aster subulatus</i> var. <i>ligulatus</i> [ <i>A. exilis</i> ]	annual water-aster	-	-	-	C	Miscellaneous wetlands, often alkaline	7	10	High; observed at RFS (Lidicker et al., 2003; Powell, 1992); known to occur in FsN at Emeryville and in FsC at San Leandro Bay (EBCNPS, 2001).
<i>Astragalus nuttallii</i> var. <i>nuttallii</i>	Nuttall's milk-vetch	SLC	-	4	*A1x	Coastal bluff scrub, rock, scree, tallus, coastal dunes, sand or sandstone	1	11	Low; presumed extirpated in Alameda and Contra Costa Counties (EBCNPS, 2001.)
<i>Astragalus nuttallii</i> var. <i>virgatus</i>	Angel Island milkwort	-	-	4	A1x	Coastal bluff scrub, sand or sandstone, presumed extirpated	1	11	Low; no suitable habitat; presumed extirpated in Alameda and Contra Costa Counties (EBCNPS, 2001).
<i>Astragalus tener</i> var. <i>tener</i>	alkali milk-vetch	SC	-	1B	*A1	Playas, grassland (adobe clay), vernal pools; alkaline	3	6	Low; last observed in FsC at Bay Farm Island in 1937 (EBCNPS, 2001).
<i>Atriplex californica</i>	California saltscale	-	-	-	A1x		4	11	Low; presumed extirpated in Alameda and Contra Costa Counties (EBCNPS, 2001).
<i>Atriplex joaquiniana</i>	San Joaquin orache, San Joaquin spearscale	-	-	1B	*A2	Chenopod scrub, alkali areas, alkali sink scrub, alkali grassland (annual or perennial), known to be associated with <i>Distichlis spicata</i> and <i>Frankenia salina</i> , miscellaneous wetlands	4	9	Low; last observed at Oakland shore (FsC) in 1929 (EBCNPS, 2001).
<i>Atriplex lentiformis</i>	quailbush	-	-	-	A1	Alkali areas, scrub, sand or sandstone	7	10	Moderate; known at Pt. Pinole (FsN) (EBCNPS, 2001).
<i>Atriplex leucophylla</i>	beach saltbush	-	-	-	A2	Coastal Strand, sandy soils, dunes	4	10	Low; no suitable habitat.
<i>Balsamorhiza macrolepis</i> var. <i>macrolepis</i>	big-scale balsamroot	SLC	-	1B	*A1	Chaparral, cismontane woodland, valley and foothill grassland, sometimes serpentinite	3	6	Low, not known in vicinity.
<i>Brodiaea elegans</i> ssp. <i>Elegans</i>	harvest brodiaea	-	-	-	D	Grassland, meadows, open woodland	4	8	High; observed at the RFS (Lidicker et al., 2003).

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		Federal <sup>a</sup>	State <sup>b</sup>	CNPS <sup>c</sup>	Local <sup>d</sup>		Start month	End month	
<i>Bromus carinatus</i> var. <i>maritimus</i>	maritime brome	-	-	-	A1x	Coastal bluff, grasslands, sand or sandstone	4	7	Low; presumed extirpated in Alameda and Contra Costa Counties (EBCNPS, 2001).
<i>Cakile edentula</i>	sea rocket	-	-	-	A1x	Coastal strand	5	9	Low; no habitat; presumed extirpated in Alameda and Contra Costa Counties (EBCNPS, 2001).
<i>Calandrinia ciliata</i>	red maids	-	-	-	D	Sandy to loamy soil, grassy areas, cultivated fields	2	5	High; observed at the RFS (Lidicker et al. 2003).
<i>Calystegia soldanella</i>	beach morning glory, seashore false bindweed	-	-	-	A1x	Coastal strand, sandy seashores	4	8	Low; no suitable habitat; presumed extirpated in Alameda and Contra Costa Counties (EBCNPS, 2001).
<i>Calystegia subacaulis</i> ssp. <i>subacaulis</i>	hill morning-glory	-	-	-	D	Dry, open scrub or woodland	4	6	High; observed at RFS (Lidicker et al., 2003; Ertter, 2002).
<i>Camissonia cheiranthifolia</i> ssp. <i>Cheiranthifolia</i>	beach evening-primrose	-	-	-	A1x	Coastal strand, sand or sandstone	4	8	Low; no suitable habitat; presumed extirpated in Alameda and Contra Costa Counties (EBCNPS, 2001).
<i>Camissonia ovata</i>	suncups	-	-	-	C	Coastal bluff, grassland (annual and perennial)	3	6	High; observed in project area by URS 2003 and at RFS (Lidicker et al., 2003; Ertter, 2002); known to occur in Mlt at Pt. Molate and Miller-Knox Regional Park, and in FsN at Pt. Pinole (EBCNPS, 2001).
<i>Cardamine californica</i> var. <i>integrifolia</i>	milk maids	-	-	-	D	Open meadows, hill slopes, canyons	2	4	High; observed at RFS (Lidicker et al., 2003; Powell, 1992).
<i>Carex comosa</i>	bristly sedge	-	-	2	-	Coastal prairie, marshes - lake margins, valley and foothill grassland	5	9	Low, not known in vicinity.
<i>Carex densa</i>	dense sedge	-	-	-	A2	Miscellaneous habitats, miscellaneous wetland	5	7	Low; presumed extirpated in Alameda and Contra Costa Counties (EBCNPS, 2001).

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		Federal <sup>a</sup>	State <sup>b</sup>	CNPS <sup>c</sup>	Local <sup>d</sup>		Start month	End month	
<i>Carex nebrascensis</i>	Nebraska sedge	-	-	-	A2	Miscellaneous wetlands, including meadows	5	9	Moderate; known at Pt. Molate (Mlt) (EBCNPS, 2001).
<i>Carex obnupta</i>	coast carex, slough sedge	-	-	-	A1	Miscellaneous wetlands, moist to wet areas, often saline	4	7	Moderate; known at Pt. Molate (Mlt) (EBCNPS, 2001).
<i>Carex praegracilis</i>	deer-bed sedge	-	-	-	B	Alkali areas, freshwater marsh, miscellaneous habitats, miscellaneous wetlands	5	8	Moderate; known in Mlt at Brooks Island, Pt. Molate, and Pt. Orient (EBCNPS, 2001).
<i>Carex subbracteata</i>	small-bract sedge	-	-	-	B	Miscellaneous wetlands, miscellaneous habitats, At least seasonally moist soil in grasslands to open forests	3	4	High; observed at the RFS (Lidicker et al., 2003; Ertter, 2002); known to occur in Mlt at Pt. Molate, Miller-Knox Regional Park, and Pt. San Pablo (EBCNPS, 2001).
<i>Carex tumulicola</i>	foothill sedge	-	-	-	C	Miscellaneous wetlands, miscellaneous habitats, meadows, open woodlands, coastal prairie, mixed evergreen forest, yellow pine forest	3	4	High; identified at RFS (Brady and Associates et al., 1994); known to occur in Mlt at Pt. Molate, and in FsN at Pt. Pinole, and historically at Pt. Isabel (last seen 1897) (EBCNPS, 2001).
<i>Castilleja ambigua</i> ssp. <i>ambigua</i> [ <i>Orthocarpus castillejoides</i> ]	salt marsh owl's clover (johnny-nip), ambiguous Indian paintbrush	SLC	-	-	A1x	Coastal bluff, grassland (annual and perennial), presumed extirpated	5	8	Low; presumed extirpated in Alameda and Contra Costa Counties (EBCNPS, 2001).
<i>Castilleja densiflora</i> ssp. <i>densiflora</i>	denseflower Indian paintbrush	-	-	-	C	Grassland (annual and perennial)	3	5	Low; presumed extirpated in Alameda and Contra Costa Counties (EBCNPS, 2001).
<i>Castilleja exserta</i> ssp. <i>Exserta</i> <sup>1</sup> [ <i>Orthocarpus purpurascens</i> var. <i>pallidus</i> ]	common owl's clover	-	-	-	D	Open fields, grassland	3	5	High; observed at the RFS (Lidicker, et al., 2003; Powell, 1992); <i>Castilleja exserta</i> was observed at the RFS, but the subspecies was not identified.

Scientific Name	Common Name	Special Status				Supporting Habitat <sup>e</sup>	Flowering		Potential to Occur in the Project Area <sup>f</sup>
		Federal <sup>a</sup>	State <sup>b</sup>	CNPS <sup>c</sup>	Local <sup>d</sup>		Start month	End month	
<i>Castilleja exserta</i> ssp. <i>latifolia</i> <sup>1</sup> [ <i>Orthocarpus purpurascens</i> var. <i>latifolia</i> ]	purple owl's clover	SLC	-	-	A1x	Open fields, grassland	3	5	High; observed at the RFS (Powell, 1992; Lidicker et al., 2003); <i>Castilleja exserta</i> was observed at the RFS, but the subspecies was not identified.
<i>Castilleja rubicundula</i> ssp. <i>lithospermoides</i>	cream sacs, Indian paintbrush	-	-	-	B	Grassland (annual and perennial)	4	6	Moderate; Known to occur in Mlt at Pt. Richmond area, and historically in FsN at Pt. Isabel (last seen 1897) and Richmond shoreline (last seen 1922) (EBCNPS, 2001).
<i>Centaurium davyi</i>	conchalagua	-	-	-	A2	Moist coastal bluff, open forest, sand or sandstone, dunes	5	8	Low, no suitable habitat; known to occur in Mlt at Pt. Molate and historically at FsC on Oakland shoreline (last seen 1935) (EBCNPS, 2001)
<i>Centaurium muehlenbergii</i>	Muhlenberg's centaury	-	-	-	C	Moist, open forest, and vernal wet meadows	6	8	Moderate; known to occur in Mlt at Pt. Molate, Miller-Knox Regional Park, and Pt. San Pablo (EBCNPS 2001)
<i>Centromadia parryi</i> ssp. <i>congdonii</i> [ <i>Hemizonia parryi</i> ssp. <i>Congdonii</i> ]	Congdon's tarplant	SC	-	1B	*A2	Valley and foothill grassland in alkaline soils (sometimes described as heavy white clay), miscellaneous wetlands	6	11	Low, not known to occur in vicinity.
<i>Centromadia parryi</i> ssp. <i>parryi</i> [ <i>Hemizonia parryi</i> ssp. <i>parryi</i> ]	Parry's tarplant	-	-	-	A2	Alkali areas, grasslands (annual and perennial), salt marsh	6	10	Moderate; known to occur in FsC at San Leandro Bay (EBCNPS, 2001).
<i>Centromadia pungens</i> ssp. <i>maritima</i> [ <i>Hemizonia pungens</i> ssp. <i>maritima</i> ]	common tarweed	-	-	-	A2	Salt marsh, low sites	4	10	Moderate; known to occur in FsC at San Leandro Bay and historically in FsC at Alameda shoreline (1921), Bay Farm Island (1936) and Oakland shoreline (1880) (EBCNPS, 2001).

Scientific Name	Common Name	Special Status				Supporting Habitat <sup>e</sup>	Flowering		Potential to Occur in the Project Area <sup>f</sup>
		Federal <sup>a</sup>	State <sup>b</sup>	CNPS <sup>c</sup>	Local <sup>d</sup>		Start month	End month	
<i>Centuculus minimus</i>	chaffweed	-	-	-	A1	Vernal pools, miscellaneous wetlands	4	7	Moderate; known to occur in Mlt at Pt. Molate (EBCNPS, 2001).
<i>Chamomilla occidentalis</i>	Western chamomile	-	-	-	A1	Alkali areas, salt marsh, vernal pools	5	8	Low, not known to occur in vicinity.
<i>Chorizanthe cuspidata</i> var. <i>cuspidata</i>	San Francisco Bay spineflower	SC	-	1B	*A1x	Coastal bluff scrub, coastal dunes, coastal prairie, coastal scrub, coastal strand, sandy soil on terraces and slopes, presumed extirpated	4	8	Low; presumed extirpated in Alameda and Contra Costa Counties (EBCNPS, 2001).
<i>Chorizanthe robusta</i> var. <i>robusta</i>	robust spineflower	E	-	1B	*A1x	Cismontane woodland, coastal dunes, coastal scrub; sandy terraces and bluffs in loose sand, presumed extirpated	4	9	Low; presumed extirpated in Alameda and Contra Costa Counties (EBCNPS, 2001).
<i>Cicendia quadrangularis</i>	Oregon timwort	-	-	-	B	Grasslands (annual and perennial), vernal pools	3	5	High; observed at the RFS (Lidicker et al., 2003); known to occur in Mlt at Pt. Richmond area and Miller-Knox Regional Park (EBCNPS, 2001).
<i>Cirsium andrewsii</i>	Franciscan thistle	SC	-	1B	*A1	Broadleaved upland forest, coastal bluff, coastal prairie, coastal scrub; mesic and sometimes serpentinite	3	7	Low, not known to occur in vicinity.
<i>Cirsium quercetorum</i>	Alameda County thistle	-	-	-	A2	Grasslands (annual and perennial), woodland	3	7	Moderate; known to occur in Mlt at Pt. Molate and Brooks Island, and historically at Miller-Knox Regional Park. Also known to occur historically at FsN at Pt. Isabel (1897) (EBCNPS, 2001).
<i>Cirsium remotifolium</i>	fewleaf thistle	-	-	-	A1	Forest, grassland (annual and perennial), serpentinite, woodland	5	9	Moderate; known to occur in Mlt at Pt. Molate (EBCNPS, 2001).

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<i>Clarkia franciscana</i>	Presidio clarkia	E	E	1B	*A1	Serpentine outcrops in valley and foothill grassland and coastal scrub; endemic to Alameda and San Francisco counties	5	7	Low, not known to occur in vicinity.
<i>Convolvulus simulans</i>	small-flowered morning-glory	-	-	4	*A1x	Chaparral openings, coastal scrub, valley and foothill grassland - clay, serpentinite seeps	3	7	Low; presumed extirpated in Alameda and Contra Costa Counties (EBCNPS, 2001).
<i>Cordylanthus maritimus</i> ssp. <i>Palustris</i>	Pt. Reyes bird's beak	SC	-	1B	*A1x	Coastal salt marsh with <i>Salicornia virginica</i> , <i>Distichlis spicata</i> , <i>Jaumea carnosa</i> , and <i>Spartina</i> spp.	6	10	Low; presumed extirpated in Alameda and Contra Costa Counties (EBCNPS, 2001).
<i>Cordylanthus mollis</i> ssp. <i>mollis</i>	soft bird's beak	E	R	1B	*A2	Coastal salt marsh or brackish marsh, often found with <i>Distichlis</i> , <i>Salicornia</i> , <i>Frankenia</i> , etc.	7	11	Moderate; known to occur in FsN at Pt. Pinole (EBCNPS, 2001); last observed in 1993 (CNDDDB, 2002).
<i>Cryptantha muricata</i>	flaccid cryptantha	-	-	-	A1	Rock, scree, tallus, sand and sandstone, fire follower	4	6	Moderate; known to occur in Mlt at Pt. Richmond area and Miller -Knox Regional Park (EBCNPS, 2001). Rocky area in project area was artificially created.
<i>Cuscuta salina</i> var. <i>major</i>	Yuncker goldenthread, saltmarsh dodder	-	-	-	A2	Salt marsh, generally on <i>Salicornia virginica</i> , miscellaneous wetlands	5	9	Moderate; known to occur in FsN at Hercules shoreline, Pinole shoreline, Pt. Isabel, Pt. Pinole, Richmond shoreline; known to occur in Mlt at Pt. Molate and Pt. San Pablo; historically known in FsC at Alameda shoreline (1904) and Oakland shoreline (1904) (EBCNPS, 2001).
<i>Cynoglossum grande</i>	hound's-tongue	-	-	-	C	Chaparral, woodland	3	6	Low; no suitable habitat.

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<i>Cystopteris fragilis</i>	brittle fern, fragile fern	-	-	-	B	Miscellaneous habitats, shady, moist rock crevices, meadows, banks, streamsides	1	12	Moderate; known to occur in Mlt at Pt. Molate (EBCNPS, 2001).
<i>Danthonia californica</i> var. <i>californica</i>	California oatgrass	-	-	-	C	Grasslands (annual and perennial), generally moist open sites, meadows, forests	5	7	High; observed in the project area (URS, 2002) and at the RFS (Lidicker et al., 2003; Brady and Associates et al., 1994; Ertter, 2002; Powell, 1992); known to occur in Mlt at Pt. Molate, Miller-Knox Regional Park, and Pt. Richmond area, and in FsN at Pt. Pinole (EBCNPS, 2001).
<i>Deinandra corymbosa</i> ssp. <i>corymbosa</i> [ <i>Hemizonia c.</i> ]	coast spikeweed	-	-	-	A2	Coastal bluffs, coastal grassland	5	10	High; observed at RFS (Lidicker et al., 2003; Ertter, 2002; Powell, 1992); known to occur in Mlt at Miller-Knox Regional Park and Brooks Island, and in FsN at Pt. Isabel and Pt. Pinole (EBCNPS, 2001).
<i>Deschampsia danthonioides</i>	annual hairgrass	-	-	-	B	Coastal bluffs, freshwater marsh, grasslands (annual and perennial), riparian areas, miscellaneous wetlands	3	8	Moderate; known to occur in FsN at Pt. Pinole and Mlt at Miller-Knox Regional Park (EBCNPS, 2001); <i>Deschampsia</i> sp. was observed at RFS (Powell, 1992).
<i>Deschampsia elongata</i>	slender hairgrass	-	-	-	B	Freshwater marsh, grasslands, woodlands	5	8	Moderate; <i>Deschampsia</i> sp. was observed at RFS (Powell, 1992); known to occur in Mlt at Pt. Molate and Pt. Richmond area (EBCNPS, 2001).
<i>Dichelostemma multiflorum</i>	many-flowered brodiaea	-	-	-	A1	Grasslands (annual and perennial), scrub, woodlands	5	7	Moderate; known to occur in Mlt at Pt. Molate (EBCNPS, 2001).

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<i>Dichondra donnelliana</i>	California ponysfoot	-	-	-	A1	Miscellaneous habitats, Open slopes, Moist fields	3	5	Moderate; known to occur in Mlt at Pt. Molate and Pt. San Pablo (EBCNPS, 2001).
<i>Dirca occidentalis</i>	western leatherwood	SLC	-	1B	*A2	Broadleafed upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, North Coast coniferous forest, riparian forest, riparian woodland (mesic)	1	4	Low; no suitable habitat; known to occur in the Richmond 7.5-minute quadrangle but not in Mlt, FsC or FsN (EBCNPS, 2001; CNDDDB, 2002).
<i>Dudleya farinosa</i>	powdery live-forever, bluff lettuce	-	-	-	A1	Rocky areas, tallus, scree	5	9	Moderate; known to occur in FsN at Berkeley Shoreline and in Mlt at Brooks Island, Miller-Knox Regional Park, Pt. Molate, Pt. Orient, Pt. Richmond area, Pt. San Pablo, and Red Rock Island (EBCNPS, 2001). Rocky area in project area was artificially created.
<i>Echinodorus berteroi</i>	upright burhead	-	-	-	A2	Freshwater marsh, ponds, ditches	7	11	Moderate; known to occur in FsN at Pt. Pinole (EBCNPS, 2001).
<i>Eleocharis parvula</i>	small spikerush	-	-	4	A1	Wet, generally saline, flats and marshes	6	9	Low, not known to occur in vicinity.
<i>Elymus elymoides</i> ssp. <i>Elymoides</i>	western bottle-brush grass	-	-	-	A2	Grasslands (annual and perennial), dry open areas	7	8	Moderate; known to occur in Mlt at Pt. Molate (EBCNPS, 2001).

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<i>Elymus glaucus</i> ssp. <i>Jepsonii</i> <sup>1</sup>	Jepson's blue wildrye	-	-	-	A1	Grasslands (annual and perennial), coniferous forest, woodland	6	8	High; observed at the RFS (Lidicker et al., 2003; Brady and Associates et al., 1994); <i>Elymus glaucus</i> was observed at the RFS, but the subspecies was not identified. <i>E. glaucus</i> ssp. <i>glaucus</i> occurs in the East Bay (Ertter, 1997) and is more common than <i>E. glaucus</i> ssp. <i>jepsonii</i> , which is known to occur in Mlt at Pt. Molate (EBCNPS, 2001).
<i>Elymus hansenii</i> (hybrid of <i>E. elymoides</i> and <i>E. glaucus</i> )	Hansen squirreltail	-	-	-	A2	Grasslands (annual and perennial)	6	8	High; observed at the RFS (Powell, 1992); known to occur in Mlt at Pt. Molate (EBCNPS, 2001).
<i>Elymus multisetus</i>	big squirreltail	-	-	-	C	Dry slopes, grassland (annual and perennial), rocky areas, sandy areas	5	7	High; observed at the RFS (Lidicker et al., 2003; Ertter, 2002; Powell, 1992); known to occur in Mlt at Pt. Molate (EBCNPS, 2001).
<i>Elymus trachycaulus</i> ssp. <i>trachycaulus</i>	slender wheatgrass	-	-	-	B	Dry to moist area, open areas, forest, woodland	6	8	High; observed at the RFS (Brady and Associates et al., 1994; Powell, 1992); Lake (2001) does not have any records of this species in Mlt, FsN or FsC.
<i>Epilobium ciliatum</i> ssp. <i>watsonii</i>	San Francisco willow herb	-	-	-	B	Freshwater marshes, riparian areas	5	7	Moderate; known to occur in FsN at Pt. Pinole (EBCNPS, 2001).
<i>Eriogonum latifolium</i>	coast buckwheat	-	-	-	A1	Coastal bluffs, scrub	6	10	Moderate; known to occur in Mlt at Pt. Orient (EBCNPS, 2001).
<i>Eriogonum luteolum</i> var. <i>caninum</i>	Tiburon buckwheat	SLC	-	3	*A1	Chaparral, coastal prairie, valley and foothill grassland; serpentinite	6	9	Low, not known in vicinity.

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<i>Eriophyllum staechadifolium</i>	seaside wooly sunflower, lizard tails	-	-	-	A1	Coastal bluffs, dunes, coastal scrub	4	9	High; observed at the RFS (Lidicker et al. 2003; Powell 1992; Gutstein 1989); historically known to occur in FsN at the Albany shoreline; known to occurs in Mlt at Brooks Island, Pt. Molate, Pt. Orient, Pt. Richmond area, Pt. San Pablo, and Red Rock (EBCNPS, 2001).
<i>Erodium macrophyllum</i>	round-leaved filaree, large-leaved filaree	-	-	2	*A1	Clay soils in valley and foothill grassland and cismontane woodland	3	5	Low, not known in vicinity.
<i>Eryngium armatum</i>	coastal eryngo	-	-	-	A2	Depressions in coastal prairie, bluffs	5	8	High; observed at the RFS (Lidicker et al., 2003; Ertter, 2002); Lake (2001) does not have any records of this species in Mlt, FsN or FsC.
<i>Euphorbia crenulata</i>	Chinese caps	-	-	-	D	Dry places; many plant communities, including closed-cone pine forest, coastal scrub, and yellow-pine forest	3	8	High; observed at the RFS (Lidicker et al., 2003; Powell, 1992).
<i>Euthamia occidentalis</i>	western flat-topped goldenrod	-	-	-	C	Miscellaneous wetlands, streambanks, ditches, marshes, meadows	7	11	Moderate; known to occur in FsN at the Berkeley shoreline and Pt. Pinole, and in Mlt at Miller-Knox Regional Park and Pt. Richmond area (EBCNPS, 2001).
<i>Festuca californica</i>	California fescue	-	-	-	C	Grassland (annual and perennial), forest, chaparral	4	7	Moderate; known to occur in FsN at the Pt. Pinole and in Mlt at Miller-Knox, Pt. Richmond area and Pt. Molate (EBCNPS, 2001).

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<i>Festuca idahoensis</i>	Idaho fescue	-	-	-	C	Dry slopes, grassland (annual and perennial), woodland	5	7	High; observed at the RFS (Lidicker et al., 2003; Ertter, 2002); known to occur in Mlt at Pt. Molate and Miller-Knox Regional Park, and in FsN at Pt. Pinole (EBCNPS, 2001).
<i>Festuca rubra</i>	red fescue	-	-	-	B	Coastal bluffs, grasslands (annual and perennial), sandy areas and sandstone	5	7	Moderate; known to occur in FsN at Pt. Pinole Regional Park and in Mlt at Brooks Island, Miller-Knox Regional Park, Pt. Molate, and Red Rock (EBCNPS, 2001).
<i>Filago californica</i>	herba impia	-	-	-	C	Burns, dry slopes, grassland, rocky areas	3	6	Moderate; known to occur in FsN at Pt. Pinole (EBCNPS, 2001).
<i>Fritillaria agrestis</i>	stinkbells	SLC	-	4	*A2	Chaparral, cismontane woodland, pinyon and juniper woodland, valley and foothill grassland - clay, sometimes serpentinite	3	6	Low, not known in vicinity.
<i>Fritillaria liliacea</i>	fragrant fritillary	SC	-	1B	*A1	Cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland; Vernal pools; often serpentinite; various soils reported though usually clay in grassland	2	4	Low; historically observed in Mlt at Pt. Richmond area (EBCNPS, 2001).
<i>Gilia capitata</i> ssp. <i>Chamissonis</i>	blue field gilia, dune gilia	SC	-	1B	-	Coastal dunes, coastal scrub	4	7	Low, not known in vicinity.
<i>Gnaphalium bicolor</i>	two-color cudweed	-	-	-	A2	Open dry slopes, sandy areas and sandstone	1	5	Moderate; known to occur Mlt at Pt. Molate (EBCNPS, 2001).
<i>Gnaphalium canescens</i> ssp. <i>Beneolens</i>	everlasting cudweed	-	-	-	B	Open dry slope, miscellaneous areas	7	10	Moderate; known to occur in FsN at Pinole shoreline and in Mlt at Pt. Molate and Pt. Richmond area (EBCNPS, 2001).

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<i>Gnaphalium canescens</i> ssp. <i>Microcephalum</i>	smallhead cudweed	-	-	-	A2	Open dry slope, chaparral	7	10	Moderate; known to occur in Mlt at Pt. Molate (EBCNPS, 2001).
<i>Grindelia hirsutula</i> var. <i>hirsutula</i> [ <i>G. humils</i> ]	hairy gumplant	-	-	-	C	Open dry slope, serpentine areas, sandy areas, miscellaneous areas	4	7	High; observed at the RFS (Ertter, 2002; Brady and Associates et al., 1994; Powell, 1992; Gutstein, 1989); known to occur in Mlt at Pt. Molate, Brooks Island, and Miller-Knox Regional Park and historically in FsN at Pt. Pinole (1895) (EBCNPS, 2001).
<i>Grindelia hirsutula</i> var. <i>maritima</i>	San Francisco gumplant	SC	-	1B	-	Sandy or serpentinite coastal bluff scrub, valley and foothill grassland	8	9	Low, not known in vicinity.
<i>Grindelia stricta</i> var. <i>angustifolia</i>	marsh gumplant	-	-	-	A2	Brackish marsh, salt marsh	3	10	High; observed at the RFS (Lidicker et al., 2003; Powell, 1992); known to occur in FsC at Alameda Shoreline, Bay Farm Island, Oakland Shoreline, and San Leandro Bay in Mlt at Pt. Molate and Pt. San Pablo; and in FsN at Albany Shoreline, Berkeley Shoreline, Emeryville, Pinole Shoreline, Pt. Isabel, Pt. Pinole, Richmond Shoreline, and Rodeo Shoreline (EBCNPS, 2001).
<i>Grindelia stricta</i> var. <i>platyphylla</i>	Pacific gumplant	-	-	-	A1	Coastal bluff, sandy areas	6	9	Low, no suitable habitat.

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<i>Helianthella castanea</i>	Diablo helianthella	SC	-	1B	*A2	Broadleaf upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grassland; usually in chaparral/oak woodland interface in rocky, azonal soils often in partial shade	4	6	Low; known to occur in Richmond 7.5-minute quadrangle, but not in Mlt, FsN or FsC (CNDDDB, 2002; EBCNPS, 2001); known to occur at elevations from 60-1,300 m and more inland from project area (7 km); project area lacks chaparral/oak woodland interface.
<i>Hemizonia congesta</i>	hayfield tarweed	-	-	-	B	Grassland, fallow fields	4	6	High; observed at the RFS.
<i>Hemizonia congesta</i> ssp. <i>luzulifolia</i>	hayfield tarweed	-	-	-	D	Grassland, fallow fields	4	6	High; observed at the RFS (Lidicker et al., 2003; Ertter, 2002; Powell, 1992).
<i>Hesperevax caulescens</i>	hogwallow starfish	-	-	4	A2	Vernal pools, valley and foothill grassland - mesic, clay	3	6	Low; not known in vicinity.
<i>Hesperolinon congestum</i>	Marin western flax	T	T	1B	-	Serpentine barrens and serpentine chaparral and grasslands; known only from Marin, San Francisco and San Mateo Counties	4	7	Low; not known in vicinity; serpentine soils not known to occur in project area.
<i>Hibiscus lasiocarpus</i>	rose-mallow	-	-	2	*A1	Freshwater marshes in moist, freshwater soaked riverbanks and low peat islands in sloughs. In California, known from the Delta watershed	6	9	Low; not known in vicinity.
<i>Holocarpha macradenia</i>	Santa Cruz tarplant	T	E	1B	*A1	Coastal prairie, coastal scrub, valley and foothill grassland in light, sandy soil or sandy clay, often with non-natives	6	10	Low; known to occur in the Richmond 7.5-minute quad, but all natural populations in Alameda and Contra Costa counties are believed to be extirpated; 22 populations were planted in the Berkeley Hills in 1982-1985, and include populations at Wildcat Canyon Regional Park (EBCNPS, 2001).

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<i>Hordeum brachyantherum</i> ssp. <i>Brachyantherum</i> <sup>1</sup>	meadow barley	-	-	-	D	Meadows, pastures, streambanks	5	8	High; <i>Hordeum brachyantherum</i> was observed at the RFS, but the subspecies was not identified (Lidicker et al., 2003; Ertter, 2002; Brady and Associates et al., 1994; Powell, 1992); documented in the flatlands (F) region from Rodeo to Fremont (west of wooded hills) by a highly reliable secondary source (Ertter, 1997). It could potentially be subspecies <i>brachyantherum</i> or <i>californicum</i> .
<i>Hordeum brachyantherum</i> ssp. <i>Californicum</i> <sup>1</sup>	California barley	-	-	-	B	Meadows, pastures, streambanks	5	8	High; <i>Hordeum brachyantherum</i> was observed at the RFS, but the subspecies was not identified (Lidicker et al., 2003; Ertter, 2002; Brady and Associates et al., 1994; Powell, 1992); known to occur in FsN at Pt. Pinole and in Mlt at Miller-Knox Regional Park (EBCNPS, 2001). It could potentially be subspecies <i>brachyantherum</i> or <i>californicum</i> .
<i>Hordeum jubatum</i>	foxtail barley	-	-	-	A2	Meadows, pastures, streambanks	5	8	High; <i>Hordeum jubatum</i> was observed at the RFS.
<i>Horkelia cuneata</i> ssp. <i>Sericea</i>	Kellogg's horkelia	SC	-	1B	*A1x	Closed-cone coniferous forest, maritime chaparral, Coastal scrub - sandy or gravelly openings, Presumed extirpated	4	9	Low; presumed extirpated in Alameda and Contra Costa Counties (EBCNPS 2001)
<i>Iris longipetala</i>	coast iris	-	-	-	A1	Miscellaneous areas, moist, open places	4	5	Low; not known in vicinity

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<i>Juglans californica</i> var. <i>hindsii</i>	Northern California black walnut	SC	-	1B	*A2	Riparian forest, riparian woodland	4	5	Low; natural population not known in vicinity; most sites in Alameda and Contra Costa County are planted; natural populations are limited.
<i>Juncus bufonius</i> var. <i>congestus</i>	clustered toad rush	-	-	-	C	Miscellaneous saline wetlands	4	8	High; observed at the RFS (Lidicker et al., 2003; Ertter, 2002); known to occur in Mlt at Pt. Molate and in FsC at Bay Farm Island and historically at the Oakland Shoreline (1935) (EBCNPS, 2001)
<i>Juncus lesueurii</i>	Lesueur's rush, salt rush	-	-	-	A1	Freshwater marsh, salt marsh	5	8	Low; known to occur in FsN at the Berkeley shoreline in 1896 (EBCNPS 2001)
<i>Juncus phaeocephalus</i> var. <i>paniculatus</i>	spreading brown-headed rush	-	-	-	B	Miscellaneous wetlands, wet places coastal and inland	5	8	High; observed at the RFS (Lidicker et al. 2003; Ertter 2002; Brady and Associates et al. 1994); known to occur in Mlt at Miller-Knox Regional Park and in FsN at Pt. Pinole (EBCNPS, 2001).
<i>Juncus phaeocephalus</i> var. <i>phaeocephalus</i>	brown-headed rush	-	-	-	B	Miscellaneous wetlands, coastal meadows and borders of marshes	5	7	Moderate; known to occur in FsN at Pt. Pinole Regional Park and in FsC at San Leandro Bay (EBCNPS, 2001).
<i>Koeleria macrantha</i>	June grass	-	-	-	C	Grasslands, coastal or interior scrub, forest, Woodland	5	7	Moderate; known to occur in Mlt at Brooks Island and Pt. Molate, and in FsN at Pt. Pinole (EBCNPS, 2001).

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<i>Lagophylla ramosissima</i> ssp. <i>Congesta</i> <sup>1</sup>	branched lagophylla	-	-	-	A1	Many dry habitats through cismontane California, mostly away from the immediate coast	5	9	High; <i>Lagophylla ramosissima</i> was observed at the RFS (Lidicker et al., 2003; Powell, 1992) but the subspecies was not identified; however, this species is not known to occur in Mlt, FsN or FsC (EBCNPS, 2001).
<i>Lagophylla ramosissima</i> ssp. <i>Ramosissima</i> <sup>1</sup>	common hareleaf	-	-	-	D	Many dry habitats through cismontane California, mostly away from the immediate coast	5	10	High; observed at the RFS (Lidicker et al., 2003; Powell, 1992); <i>Lagophylla ramosissima</i> was observed at the RFS, but the subspecies was not identified.
<i>Lasthenia conjugens</i>	Contra Costa goldfields	E	-	1B	*A1	Cismontane woodland, playas (alkaline), valley and foothill grassland, vernal pools – mesic	3	6	Low; not known in vicinity.
<i>Lasthenia ferrisiae</i>	Ferris' goldfields	-	-	4	*A2	Vernal pools and wet alkaline, clay areas	2	5	Low; not known in vicinity.
<i>Lasthenia maritima</i>	Farallon weed	-	-	-	A1	Rocky areas, tallus, scree, sandy areas or sandstone	3	5	Moderate; known to occur in Mlt at Brothers Island and Red Rock (EBCNPS, 2001).
<i>Lathyrus jepsonii</i> var. <i>jepsonii</i>	Delta tule pea	SC	-	1B	*A2	Freshwater and brackish marshes. Often with <i>Typha</i> spp., <i>Aster lentus</i> , <i>Rosa californica</i> , <i>Juncus</i> spp., <i>Scirpus</i> spp., etc. Usually on marsh or slough edges	5	9	Low; known to occur historically in FsC at Oakland shoreline and last observed in 1886 (EBCNPS, 2001); most of distribution restricted to Sacramento/San Joaquin River Delta.
<i>Leptochloa uninervia</i>	Mexican sprangletop	-	-	-	A1	Miscellaneous wetlands, ditches, disturbed wet places, drying ponds	3	12	Moderate; known to occur in FsC at Bay Farm Island (EBCNPS, 2001).
<i>Lessingia hololeuca</i>	wooly-headed lessingia	-	-	3	*A1x	Coastal scrub, lower montane coniferous forest, valley and foothill grassland. Roadsides and fields in clay or serpentinite	6	10	Low; presumed extirpated in Alameda and Contra Costa Counties (EBCNPS, 2001).

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<i>Leymus mollis</i>	creeping wild-rye	-	-	-	A1x	Coastal strand	6	8	Low; presumed extirpated in Alameda and Contra Costa Counties (EBCNPS, 2001).
<i>Lilaea scilloides</i>	flowering quilwort	-	-	-	C	Miscellaneous wetlands, including vernal pools, ditches, streams, ponds, lake margins	3	10	Moderate; known to occur in FsN at Hercules shoreline (EBCNPS, 2001).
<i>Lilaeopsis masonii</i>	Mason's lilaeopsis	SC	R	1B	*A2	Marshes and swamps (brackish or freshwater), riparian scrub	4	11	Low; not known in vicinity; primarily occurs in Delta.
<i>Limonium californicum</i>	California sea-lavender	-	-	-	B	Coastal strand, salt marsh	7	12	High; observed at the RFS (Lidicker et al., 2003; Brady and Associates et al., 1994; Gutstein, 1989); known to occur in Mlt at Pt. Molate; in FsN at Albany Shoreline, Berkeley Shoreline, Emeryville, Pt. Isabel, and Pt. Pinole; in FsC at Alameda Shoreline, San Leandro Bay; and historically at Bay Farm Island (1928) (EBCNPS, 2001).
<i>Linanthus grandiflorus</i>	large-flowered linanthus	SC	-	4	*A1	Coastal bluff scrub, closed-cone coniferous forest, cismontane woodland, coastal dunes, coastal prairie, coastal scrub, valley and foothill grassland - usually sandy	4	8	Low; not known in vicinity.
<i>Linaria canadensis</i>	blue toadflax	-	-	-	B	Gravel, sandy areas and sandstone; fire follower	4	6	Low; no suitable habitat.
<i>Lomatium californicum</i>	chu-chu-pate, California desert parsley	-	-	-	B	Woodland, brushy slopes	4	6	Low; no suitable habitat.
<i>Lonicera involucrata</i> var. <i>ledebourii</i>	black twinberry	-	-	-	B	Riparian areas, moist coastal places	3	4	Low; known to occur in FsN in Emeryville in 1880.

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<i>Lotus purshianus</i> var. <i>purshianus</i>	Spanish lotus	-	-	-	D	Coast, chaparral, mountain forests, water courses, roadsides, weedy areas	5	10	High; observed at the RFS (Lidicker et al., 2003).
<i>Lotus wrangelianus</i>	calf lotus	-	-	-	D	Coastal bluffs, chaparral, disturbed areas	3	6	High; observed at the RFS (Lidicker et al., 2003; Ertter, 2002).
<i>Lupinus affinis</i>	fleshy lupine	-	-	-	A1	Miscellaneous areas; Open areas, banks, grassy slopes; coastal prairie, north coastal scrub, mixed evergreen forest, and other habitats	3	5	Low; known to occur historically in FsN at Pt. Pinole and Pt. Isabel (1911) and in Mlt at Pt. Molate (EBCNPS, 2001).
<i>Lupinus albifrons</i>	silver bush-lupine	-	-	-	D	Open areas in sand or rock. Coastal Strand, coastal sage scrub, north coastal scrub, closed-cone pine forest	3	6	High; observed at the RFS (Lidicker et al., 2003; Powell, 1992).
<i>Lupinus arboreus</i>	yellow bush-lupine	-	-	-	A1	Coastal bluffs, coastal strand, coastal sage scrub, north coastal scrub, sandy areas and sandstone, closed-cone pine forest	3	6	High; observed at the RFS (Lidicker et al., 2003; Powell, 1992); known to occur in Mlt at Pt. Molate, Red Rock and Brooks Island; in FsN historically at Berkeley Shoreline (1893) (EBCNPS, 2001).
<i>Lupinus bicolor</i> var. <i>umbellatus</i>	umbellate dove lupine	-	-	-	B	Miscellaneous areas. Open or disturbed area, sometimes sandy. Coastal scrub, north coastal scrub, mixed evergreen forest, etc.	3	6	Moderate; known to occur in Mlt at Pt. Molate (EBCNPS, 2001).
<i>Lupinus nanus</i>	sky lupine	-	-	-	C	Miscellaneous areas. Open or disturbed areas. Grassy hills, fields, brushy slopes	4	5	Moderate; known to occur in Mlt at Miller-Knox Regional Park and Pt. Richmond area; and in FsN at Pt. Pinole (EBCNPS, 2001).
<i>Madia anomalla</i>	plumpseeded madia	-	-	-	A2	Grasslands (annual and perennial), slopes	5	6	Moderate; known to occur in Mlt at Pt. Molate (EBCNPS, 2001).

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<i>Madia elegans ssp. Densifolia</i>	common madia	-	-	-	C	Grasslands (annual and perennial), slopes, valleys	8	11	Moderate; known to occur in FsN at Pinole Shoreline (EBCNPS, 2001).
<i>Madia elegans ssp. Vernalis</i>	spring common madia	-	-	-	A2	Grasslands (annual and perennial), valleys, foothills	3	6	Low; not known in vicinity.
<i>Madia sativa</i>	coast tarweed	-	-	-	D	Coastal grassland	5	10	High; observed at the RFS (Lidicker et al., 2003; URS, 2002; Powell, 1992).
<i>Meconella oregana</i> [ <i>Meconella denticulata</i> var. <i>oregana</i> ]	Oregon meconella	SC	-	1B	*A2	Open, moist areas in coastal prairie and coastal scrub	3	4	Low; not known in vicinity.
<i>Microseris paludosa</i>	marsh microseris	SLC	-	1B	-	Closed-cone coniferous forest, cismontane woodland, coastal scrub, valley and foothill grassland	4	6	Low; not known in vicinity.
<i>Monardella villosa ssp. globosa</i>	robust monardella	SLC	-	1B	*A1	Openings in chaparral and cismontane woodland, and coastal scrub	6	7	Low; not known in vicinity.
<i>Muilla maritima</i>	common muilla	-	-	-	B	Alkali areas, dry slopes, grasslands, scrub, serpentine areas, woodland, miscellaneous wetlands	3	6	Moderate; known to occur in FsN at Pt. Isabel (1887) and in Mlt at Pt. Richmond area (1900) (EBCNPS, 2001).
<i>Nassella cernua</i>	nodding needlegrass	-	-	-	B	Grasslands (annual and perennial), chaparral, juniper woodland	4	5	Moderate; known to occur in FsN at Pt. Pinole (EBCNPS, 2001).
<i>Nassella lepida</i>	foothill stipa	-	-	-	C	Grasslands (annual and perennial), coastal and inland scrub, oak grassland, fry slopes, chaparral	5	6	Moderate; known to occur in Mlt at Miller-Knox Regional Park and Pt. Molate (EBCNPS, 2001).

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<i>Nassella pulchra</i>	purple needle-grass	-	-	-	C	Grasslands (annual and perennial), oak woodland, chaparral	4	5	High; observed in project area (URS, 2003) and RFS (Lidicker et al., 2003; Ertter, 2002; Brady and Associates et al., 1994; Powell, 1992); known to occur in Mlt at Pt. Molate and Miller-Knox Regional Park and in FsN at Pinole Shoreline (EBCNPS, 2001).
<i>Nemophilla menziesii</i> var. <i>menziesii</i>	Menzies' baby blue eyes	-	-	-	C	Grasslands (annual and perennial), meadows, chaparral, woodland, slopes, desert wash	2	6	Moderate; known to occur in Mlt at Pt. Molate (EBCNPS, 2001).
<i>Nemophilla parviflora</i> var. <i>parviflora</i>	smallflower nemophilla	-	-	-	C	Forest, woodland, roadsides, slopes	4	6	Moderate; known to occur in Mlt at Pt. Molate (EBCNPS, 2001).
<i>Oenothera elata</i> ssp. <i>Hookeri</i>	Hooker's evening primrose	-	-	-	B	Miscellaneous wetlands, moist, coastal, slightly inland sandy bluffs	6	9	Moderate; known to occur in FsC at San Leandro Bay and in Mlt at Brooks Island, Miller-Knox Regional Park and Pt. Richmond area (EBCNPS, 2001).
<i>Pentacheta bellidiflora</i>	white-rayed pentachaeta	E	E	1B	-	Open dry grassy slopes in grassy areas often on soils derived from serpentine bedrock; only known from one extended occurrence bisected by Highway 280	3	5	Low; not known in vicinity.
<i>Perideridia gairdneri</i> ssp. <i>gairdneri</i>	Gairdner's yampah	SC	-	4	*A1	Broadleaved upland forest, chaparral, coastal prairie, valley and foothill grassland, vernal pools – mesic	6	10	Moderate; known to occur in Mlt at Brooks Island (EBCNPS, 2001).
<i>Phacelia californica</i>	California scorpionweed	-	-	-	D	Bluffs, open slopes, roadcuts, chaparral, woodland	4	7	High; observed at the RFS (Lidicker et al., 2003; Powell, 1992; Gutstein, 1989).

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<i>Phacelia malvifolia</i>	stinging phacelia	-	-	-	A1	Gravelly or sandy areas, coniferous forest, shrubland	4	7	Low; known to occur in FsN at Emeryville in 1892 (EBCNPS, 2001).
<i>Phalaris californica</i>	California canary grass	-	-	-	A1x	Grasslands, woodlands	5	11	Low; presumed extirpated in Alameda and Contra Costa Counties (EBCNPS, 2001).
<i>Piperia elegans</i>	green rein-orchid	SLC	-	-	B	Generally dry and open sites, forest, scrub, woodland	5	9	Moderate; known to occur in Mlt at Pt. Molate (EBCNPS, 2001).
<i>Piperia elongata</i>	chaparral orchid	-	-	-	A1	Generally dry sites, mixed evergreen forest, coniferous forest, scrub	5	9	Moderate; known to occur in Mlt at Pt. San Pablo (EBCNPS, 2001).
<i>Piperia michaelii</i>	Michael's rein-orchid	-	-	4	*A2	Generally dry sites, mixed evergreen forest, closed- cone pine forest, coastal shrubland, scrub, woodland	5	9	Moderate; known to occur at Pt. Molate/Richmond area at Pt. San Pablo.
<i>Piperia transversa</i>	flat spurred piperia	-	-	-	A2	Generally dry sites, dry slopes, mixed evergreen forest, coniferous forests, scrub, shrubland, woodlands	5	9	Moderate; known to occur in Mlt at Pt. San Pablo (EBCNPS, 2001).
<i>Plagiobothrys chorisianus</i> var. <i>chorisianus</i>	Choris's popcorn-flower	SLC	-	1B	*A1x	Mesic sites in chaparral, coastal scrub, and coastal prairie	3	6	Low; presumed extirpated in Alameda and Contra Costa Counties (EBCNPS, 2001).
<i>Plagiobothrys glaber</i>	hairless popcorn-flower	SC	-	1A	*A1x	Coastal salt marshes and alkaline meadows and seeps	3	5	Low; presumed extirpated in Alameda and Contra Costa Counties (EBCNPS, 2001).
<i>Plantago elongata</i>	slender plantain	-	-	-	B	Alkali areas, coastal strand, beaches, vernal pools	4	6	Low; known to occur in FsN at Richmond shoreline (1900) (EBCNPS, 2001).
<i>Plantago maritima</i>	sea plantain	-	-	-	A1	Wet and saline places, salt marsh, coastal bluffs	5	9	Moderate; known to occur in Mlt at Pt. San Pablo and Pt. Orient, and in FsN at Emeryville and at Berkeley shoreline (1893), and in FsC at Bay Farm Island (1914) (EBCNPS, 2001).

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<i>Plantago subnuda</i>	tall coastal plantain	-	-	-	A1	Miscellaneous wetlands, coastal bluffs, marshes	5	9	Low; known to occur in FsN at Berkeley shoreline (1921) (EBCNPS, 2001).
<i>Pleuropogon californicus</i>	semaphore grass	-	-	4	B	Riparian areas, miscellaneous wetlands	3	5	Moderate; known to occur in FsN at Pt. Pinole and Hercules Shoreline (EBCNPS, 2001).
<i>Poa howellii</i>	Howell's bluegrass	-	-	-	B	Chaparral, rocky areas, woodlands, vernal pools	4	6	Low; known to occur in Mlt at Red Rock (1936) (EBCNPS, 2001).
<i>Polygonum lapathifolium</i>	willow-weed	-	-	-	C	Miscellaneous wetlands	6	8	High; observed at the RFS (Lidicker et al., 2003); known to occur in FsC at Berkeley Shoreline (EBCNPS, 2001).
<i>Prunella vulgaris</i> var. <i>lanceolata</i>	lance self-heal	-	-	-	A1	Forest, riparian areas, woodland, miscellaneous wetlands	5	9	Low; historically known to occur in FsN at Pt. Pinole (EBCNPS, 2001).
<i>Prunus emarginata</i>	bitter cherry	-	-	-	C	Rocky areas, chaparral, forest	4	6	Moderate; known to occur in Mlt at Miller-Knox Regional Park, Pt. Molate and Pt. Richmond area (EBCNPS, 2001).
<i>Ranunculus californicus</i>	California buttercup	-	-	-	D	Coastal scrub, woodland, grassland, moist meadows and slopes	2	5	High; observed at the RFS (Ertter, 2002; Powell, 1992).
<i>Ranunculus occidentalis</i>	Western buttercup	-	-	-	A2	Grasslands, woodlands	3	6	Low; historically known to occur in Mlt at Pt. Molate (EBCNPS, 2001).
<i>Ribes sanguineum</i> var. <i>glutinosum</i>	red-flowering currant	-	-	-	B	Open places or among shrubs and trees in many habitats, including chaparral, mixed evergreen forest, foothill woodland, closed-cone pine forest	3	4	Moderate; known to occur in Mlt at Pt. Richmond area (EBCNPS, 2001).
<i>Rumex maritimus</i>	golden dock	-	-	-	A2	Brackish marsh, salt marsh	5	9	Moderate; known to occur in Mlt at Pt. Molate and in FsN at Hercules Shoreline (EBCNPS, 2001).

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<i>Rumex salicifolius</i> var. <i>crassus</i>	thick-leaved willow dock	-	-	-	A1	Coastal bluffs, coastal strand, miscellaneous wetlands	5	9	Moderate; known to occur in Mlt at Pt. Molate and Miller-Knox Regional Park (EBCNPS, 2001).
<i>Rumex salicifolius</i> var. <i>salicifolius</i>	willow-leaved willow dock	-	-	-	B	Coastal bluffs, coastal strand, miscellaneous wetlands	5	9	High; observed at the RFS (Stafford, 2006).
<i>Sambucus racemosa</i> var. <i>racemosa</i>	red elderberry	-	-	-	A1	Riparian areas	3	7	Low; known to occur in FsN at Emeryville (1913) (EBCNPS, 2001).
<i>Sanicula maritima</i>	abobe sanicle	SC	R	1B	*A1x	Chaparral, coastal prairie, meadows and seeps, valley and foothill grassland in clay and serpentinite, presumed extirpated	2	5	Low; presumed extirpated in Alameda and Contra Costa Counties (EBCNPS, 2001).
<i>Scirpus cernuus</i>	fiber optic grass, low club rush	-	-	-	B	Sandy areas and sandstone, miscellaneous wetlands	5	8	Moderate; known to occur in Mlt at Pt. Molate and in FsN at Albany Shoreline and Emeryville (EBCNPS, 2001).
<i>Scirpus maritimus</i>	salt marsh bulrush	-	-	-	C	Marshes; miscellaneous wetlands	6	7	Moderate; known to occur in FsC at Bay Farm Island, and in Mlt at Pt. Molate and Pt. Richmond area (1940) (EBCNPS, 2001).
<i>Scrophularia californica</i> ssp. <i>Floribunda</i> <sup>1</sup>	California figwort	-	-	-	B	Low elevation cismontane habitats, chaparral, moist places, roadsides	3	5	High; <i>Scrophularia californica</i> observed at the RFS (Lidicker et al., 2003; Powell, 1992); however, the subspecies was not recorded. <i>S. californica</i> ssp. <i>floribunda</i> is not known to occur in Mlt, FsN or FsC (EBCNPS, 2001), so the <i>S. californica</i> at the RFS is probably the more common subspecies <i>californica</i> .

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<i>Scrophularia californica</i> ssp. <i>californica</i> <sup>1</sup>	California bee-plant	-	-	-	D	Coastal areas, coastal scrub, closed cone pine forest, redwood forest, chaparral, moist places, roadsides	2	7	High; <i>Scrophularia californica</i> was observed at the RFS (Lidicker et al., 2003; Powell, 1992); however, the subspecies was not recorded, so the <i>S. californica</i> at the RFS is probably the more common subspecies <i>californica</i> .
<i>Senecio aphanactis</i>	rayless ragwort	-	-	1B	*A1	Chaparral, cismontane woodland, coastal scrub in drying alkaline flats, grasslands (annual and perennial)	1	4	Low; not known to occur in vicinity.
<i>Senecio hydrophillus</i>	great swamp groundsel	-	-	-	A1	Miscellaneous wetlands	5	8	Low; known to occur in FsN at Berkeley Shoreline (1894) (EBCNPS, 2001).
<i>Sidalcea malviflora</i> ssp. <i>laciniata</i>	checker mallow	-	-	-	B	Grasslands, woodlands	4	5	Moderate; known to occur in Mlt at Brooks Island (EBCNPS, 2001).
<i>Silene verecunda</i> ssp. <i>Verecunda</i>	San Francisco champion	SC	-	1B	-	Coastal bluff scrub, chaparral, coastal prairie, coastal scrub, valley and foothill grassland; sandy soil	3	8	Low; not known to occur in vicinity.
<i>Sisyrinchium bellum</i>	blue-eyed grass	-	-	-	D	Grasslands	3	5	High; observed at the RFS (Lidicker et al., 2003; Ertter, 2002; Brady and Associates et al., 1994; Powell, 1992).

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<i>Spartina foliosa</i>	Pacific cordgrass	SLC	-	-	A2	Coastal salt marshes	7	11	High; observed at the RFS (Lidicker et al., 2003; Brady and Associates et al., 1994; Powell, 1992; Gutstein, 1989); known to occur in Mlt at Pt. Molate and Pt. Richmond area; in FsN at Albany Shoreline, Emeryville, Pinole Shoreline, Pt. Isabel, Pt. Pinole, Richmond Shoreline, and Rodeo Shoreline; and in FsC at Alameda Shoreline and San Leandro Bay (EBCNPS, 2001). However, cordgrass from the project area will be DNA-tested to confirm species identification because <i>S. alterniflora</i> is also mapped in the project area.
<i>Spergularia macrotheca</i> var. <i>leucantha</i>	perennial sand-spurry	-	-	-	A1	Alkali areas, vernal pools	4	6	Low; known to occur historically in Mlt at Miller-Knox Regional Park (EBCNPS, 2001).
<i>Spergularia macrotheca</i> var. <i>longistyla</i>	long-style spurry	-	-	-	B	Alkali areas, miscellaneous wetlands	3	10	Moderate; known to occur in FsN at Richmond Shoreline and FsC at Oakland Shoreline (EBCNPS, 2001).
<i>Spergularia macrotheca</i> var. <i>macrotheca</i>	beach sand-spurry	-	-	-	A2	Alkali areas, coastal bluffs, rocky areas, scree, tallus, miscellaneous wetlands	1	12	Moderate; known to occur in FsN at Albany Shoreline, Pinole Shoreline, and Pt. Isabel; and in Mlt at Pt. Orient and Pt. Molate (EBCNPS, 2001).

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<i>Spiranthes romanzoffiana</i>	Ladies-tresses	-	-	-	A1	Freshwater marsh	6	8	Moderate; <i>Spiranthes sp.</i> was observed at the RFS (Brady and Associates et al., 1994; Powell, 1992), but <i>S. romanzoffiana</i> at RFS and in Alameda and Contra Costa Counties is presumed extirpated (EBCNPS, 2001).
<i>Stachys ajugoides</i> var. <i>ajugoides</i>	bugle hedgenettle	-	-	-	A2	Miscellaneous wetlands, moist, open places often remaining wet into summer	5	8	High; observed at the RFS (Lidicker et al., 2003; Ertter, 2002). Historically known in FsC at Bay Farm Island in 1891 (EBCNPS, 2001).
<i>Stebbinsoseris decipiens</i>	Santa Cruz microseris	SC	-	1B	-	Open, sandy, shaly or serpentine sites	4	5	Low; not known in the vicinity.
<i>Stephanomeria virgata</i> ssp. <i>Pleurocarpa</i>	tall stephanomeria	-	-	-	C	Dry slopes	7	10	Moderate; known to occur in Mlt at Miller-Knox Regional Park, Pt. Molate and Pt. San Pablo (EBCNPS, 2001).
<i>Streptanthus albidus</i> ssp. <i>peramoenus</i>	most beautiful jewel-flower	SC	-	1B	*A2	Chaparral, cismontane woodland, and valley and foothill grassland; serpentine outcrops on ridges and dry slopes	4	6	Low; known to occur in Richmond 7.5-minute quadrangle but not in Mlt, FsN or FsC and at elevations from 120-1,000 m (CNDDDB, 2002; EBCNPS, 2001).
<i>Streptanthus niger</i>	Tiburon jewel-flower	E	E	1B	-	Valley and foothill grassland in serpentinite; known only from three occurrences on the Tiburon Peninsula	5	6	Low; not known in vicinity.
<i>Suaeda californica</i>	California seablite	E	-	3.5.1.1	-	Margins of coastal salt marshes	7	10	Low; believed to be extirpated in Alameda and Contra Costa Counties (CNDDDB, 2002).

Scientific Name	Common Name	Special Status				Supporting Habitat <sup>e</sup>	Flowering		Potential to Occur in the Project Area <sup>f</sup>
		Federal <sup>a</sup>	State <sup>b</sup>	CNPS <sup>c</sup>	Local <sup>d</sup>		Start month	End month	
<i>Suaeda moquinii</i>	bush seepweed	-	-	-	B	Alkali areas, miscellaneous wetlands	5	9	Moderate; known to occur in FsC at Bay Farm Island and Alameda Shoreline (1905) and in FsN at Albany Shoreline (1912) (EBCNPS, 2001).
<i>Trientalis latifolia</i>	star flower	-	-	-	B	Forest, woodland	4	7	Low; no suitable habitat.
<i>Trifolium amoenum</i>	showy Indian clover	E	-	1B	-	Coastal bluff scrub and valley and foothill grassland, sometimes serpentine soil, open sunny site, swales	4	6	Low; not known in vicinity.
<i>Trifolium depauperatum</i> var. <i>hydrophilum</i>	saline clover	SC	-	1B	*A1x	Mesic alkaline sites in marshes, vernal pools and valley and foothill grasslands, Salt marshes	4	6	Low; presumed extirpated in Alameda and Contra Costa Counties (EBCNPS, 2001).
<i>Triglochin concinna</i> var. <i>concinna</i>	slender arrow-grass	-	-	-	A1	Salt marsh	3	8	Moderate; known to occur in FsN at San Leandro Bay, Alameda Shoreline (1920), and Oakland Shoreline (1880) and in FsN at Berkeley Shoreline (1906) and Emeryville Shoreline (1880) (EBCNPS, 2001).
<i>Triglochin maritima</i>	seaside arrow-grass	-	-	-	C	Alkali areas, salt marshes, miscellaneous wetlands	4	8	Moderate; known to occur in FsC at San Leandro Bay, and in FsN at Pt. Pinole and in Mlt at Pt. Richmond area (EBCNPS, 2001).
<i>Triglochin striata</i>	three-ribbed arrow-grass	-	-	-	A1	Saline and brackish marshes	5	9	Low; known to occur in FsC at Alameda Shoreline (1882) (EBCNPS, 2001).
<i>Triphysaria floribunda</i>	San Francisco owl's- clover	SC	-	1B	-	Coastal prairie, coastal scrub and valley and foothill grassland, usually serpentine soil	4	6	Low; not known in vicinity.
<i>Triphysaria pusilla</i>	little owl's clover	-	-	-	D	Grassland	4	5	High; observed at the RFS (Lidicker et al., 2003; Ertter, 2002).

Scientific Name	Common Name	Special Status				Supporting Habitat <sup>e</sup>	Flowering		Potential to Occur in the Project Area <sup>f</sup>
		Federal <sup>a</sup>	State <sup>b</sup>	CNPS <sup>c</sup>	Local <sup>d</sup>		Start month	End month	
<i>Triteleia hyacinthina</i>	wild hyacinth/ white brodiaea	-	-	-	C	Grassland (annual and perennial)	4	5	High; observed at the RFS (Lidicker et al., 2003; Ertter, 2002); known to occur in Mlt at Pt. Molate and in FsN at Pt. Pinole (EBCNPS, 2001).
<i>Vicia gigantea</i>	giant vetch	-	-	-	B	Coastal bluff, coastal strand, beaches, roadside, woodland, miscellaneous habitats	3	6	Moderate; known to occur in Mlt at Pt. Richmond area (EBCNPS, 2001).
<i>Vulpia microstachys</i> var. <i>microstachys</i>	reflexed vulpia	-	-	-	A2	Dry slopes, rocky areas, serpentine areas, sandy areas, woodland	4	6	Low; known to occur historically in Mlt at Pt. Richmond area (EBCNPS, 2001).
<i>Vulpia octoflora</i> var. <i>octoflora</i>	six-week's fescue	-	-	-	A1	Dry slopes, chaparral, dry wash, sandy areas	4	6	Low; known to occur historically in Mlt at Red Rock (1936) (EBCNPS, 2001)
<i>Woodwardia fimbriata</i>	giant chain-fern	-	-	-	C	Riparian areas	8	11	Moderate; known to occur in Mlt at Miller-Knox Regional Park and in FsN at Pinole Shoreline (EBCNPS, 2001)
<i>Wyethia angustifolia</i>	California compassplant	-	-	-	D	Grassland	4	7	High; observed at the RFS (Lidicker et al., 2003; Ertter, 2002; URS, 2003; Brady and Associates et al., 1994; Powell, 1992).

**Notes:**

<sup>a</sup> **Federal Status Codes:**

- E** Endangered. Species in danger of extinction throughout all or a significant portion of its range.
- T** Threatened. Species likely to become endangered within the foreseeable future.
- PE** Proposed for listing as endangered.
- PT** Proposed for listing as threatened.
- PD** Proposed for delisting.
- C** Candidate for listing.
- SC** Special concern species (Sacramento Fish and Wildlife Service designation).
- SLC** Species of local concern or conservation importance (Sacramento Fish and Wildlife Service designation).

<sup>b</sup> **California Status Codes:**

- E** Endangered. Species whose continued existence in California is in jeopardy.
- T** Threatened. Species likely to become endangered within the foreseeable future.

- R** Rare. Plant species, although not presently threatened with extinction, that may become endangered in the foreseeable future.
- SC** California Department of Fish and Game species of special concern.
- FP&P** Fully protected and protected species defined in the State of California under Sections 3511 and 4700 of the Fish and Game Code.

<sup>c</sup> **CNPS Status Codes** (California Native Plant Society):

- 1A** Plants presumed extinct in California.
- 1B** Plants that are rare, threatened, or endangered in California and elsewhere.
- 2** Plants that are rare, threatened, or endangered in California, but more common elsewhere.
- 3** Plants about which more information is needed.
- 4** Plants of limited distribution

<sup>d</sup> **Local Status Codes** (based on unusual and significant plants occurring in Pt. Molate/Pt. Richmond areas (Mlt), Flatlands Shore Central (FsC) and Flatland Shore North (FsN) botanical regions of Contra Costa and Alameda County (EBCNPS 2001) and observations of UC Berkeley botanists Bill Lidicker, Barbara Ertter and Bruce Baldwin (Lidicker et al. 2003):

- \*A** Statewide special status plants listed by federal agencies, state agencies or state level CNPS.
- A1** Plants known from 2 or less botanical regions in East Bay, either currently or historically.
- A1x** Plants previously known from East Bay, but now believed to have been extirpated, and no longer occurring here.
- A2** Plants currently known from 3-5 regions in East Bay, or otherwise threatened (if more than 5 regions, meeting other important criteria such as small, stressed or declining populations, small geographical range, limited or threatened habitat etc.).
- B** Plants currently known from 6-9 regions in East Bay, or otherwise threatened (if more than 9, meeting other important criteria as described for A2).
- C** Plants currently known from 10 or more regions in East Bay, but potentially threatened if certain conditions persist, such as overdevelopment, water diversions, excessive grazing, weed or insect invasions, etc.
- D** Native plants of local importance as indicated by UC botanists (Lidicker et al. 2003).

<sup>e</sup> **Sources for supporting habitat descriptions:**

- 1a.** CNPS 2002
- 1b.** California Natural Diversity Data Base (CNDDDB) 2002
- 1c.** Hickman 1993
- 1d.** Munz 1968
- 1e.** EBCNPS 2001

<sup>f</sup> **Species in bold type are known to occur in the vicinity of the project area:** Richmond 7.5 minutes USGS quadrangle in the CNPS database and/or CNDDDB, or in the Flatlands Shore - North (FsN), Pt. Molate/Pt. Richmond areas (Mlt), or Flatlands Shore - Central (FsC) as defined in *Unusual and Significant Plants in Alameda and Contra Costa Counties* (EBCNPS 2001). Some of these occurrences are presumed extirpated.

- FsC** Flatlands Shore Central (Alameda Shoreline, Bay Farm Island, Oakland Shore, and San Leandro Bay)
- Mlt** Pt. Molate/Pt. Richmond areas (Brooks Island, Brothers Island, Miller-Knox Regional Park, Pt. Molate, Pt. Orient, Pt. Richmond area, Pt. San Pablo, Red Rock Island)
- FsN** Flatland Shore North (Albany Shoreline, Berkeley Shoreline, Emeryville, Hercules Shoreline, Pinole Shoreline, Pt. Isabel Regional Park, Pt. Pinole Regional Park, Richmond Shoreline, and Rodeo Shoreline)

<sup>1</sup> **Species observed in the vicinity of the project area, but the subspecies was not identified.**

## **APPENDIX C**

**Location of Listed Plants (Drawings S-1 through S-4)**

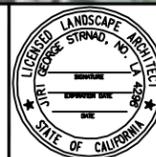
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0 0.5" 1.0"  
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 CHECKED  
 CS  
 PEER REVIEWED  
 EJK  
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 CS  
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RICHMOND FIELD STATION

BIG & NORTHWEST MEADOWS'  
 SENSITIVE PLANTS

REVISION  
 A

PROJECT 17325753

DRAWING  
 S-1

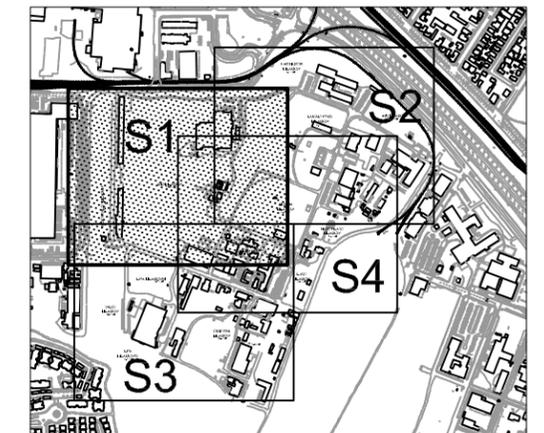


**LEGEND:**

— STUDY AREA BOUNDARY

**SENSITIVE PLANT LEGEND:**

- CO— suncups (EBCNPS: C)  
*(Carnissonia ovata)*
- CD— dense sedge (EBCNPS: A2)  
*(Carex densa)*
- CS— small-bract sedge (EBCNPS: B)  
*(Carex subbracteata)*
- CT— foothill sedge (EBCNPS: C)  
*(Carex tumulicola)*
- CM— false pimpinell (EBCNPS: A1)  
*(Centunculus minimus)*
- CQ— Oregon timwort (EBCNPS: B)  
*(Cicendia quadrangulans)*
- DC— California oatgrass (EBCNPS: C)  
*(Danthonia californica)*
- DE— coast spikeweed (EBCNPS: A2)  
*(Deinandra corymbosa ssp. corymbosa)*
- DD— California ponyfoot (EBCNPS: A1)  
*(Dichondra donnelliana)*
- EH— Hansen's wildrye (EBCNPS: A2)  
*(Elymus hansenii)*
- EM— big squirreltail (EBCNPS: C)  
*(Elymus multisetus)*
- EA— coastal eryngo, coyote thistle (EBCNPS: A2)  
*(Eryngium armatum)*
- ET— slender wheatgrass (EBCNPS: B)  
*(Elymus trachycaulus ssp. trachycaulus)*
- GH— hairy gumplant (EBCNPS: C)  
*(Grindelia hirsutula var. hirsutula)*
- HC— hayfield tarweed (EBCNPS: B)  
*(Hemizonia congesta)*
- HU— foxtail barley (EBCNPS: A2)  
*(Hordeum jubatum)*
- JB— clustered toadrush (EBCNPS: C)  
*(Juncus bufonius var. congestus)*
- JP— brown-headed rush (EBCNPS: B)/spreading brown-headed rush (EBCNPS: B)  
*(Juncus phaeocephalus var. phaeocephalus & J. p. var. paniculatus)*
- NP— purple needlegrass (EBCNPS: C)  
*(Nassella pulchra)*
- RS— willow-leaved dock (EBCNPS: B)  
*(Rumex salicifolius var. salicifolius)*
- SR— ladies-tresses (EBCNPS: A1)  
*(Spiranthes romanzoffiana)*
- SA— ajuga hedge nettle (EBCNPS: A2)  
*(Stachys ajugoides ssp. ajugoides)*
- TH— wild hyacinth, white brodiaea (EBCNPS: C)  
*(Trilelia hyacinthina)*



KEY PLAN

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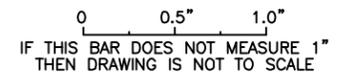
**SENSITIVE PLANT LEGEND:**

- CO— suncups (EBCNPS: C)  
*(Camissonia ovata)*
- CD— dense sedge (EBCNPS: A2)  
*(Carex densa)*
- CS— small-bract sedge (EBCNPS: B)  
*(Carex subbracteata)*
- CT— foothill sedge (EBCNPS: C)  
*(Carex tumulicola)*
- CM— false pimpernel (EBCNPS: A1)  
*(Centunculus minimus)*
- CQ— Oregon timwort (EBCNPS: B)  
*(Cicendia quadrangularis)*
- DC— California oatgrass (EBCNPS: C)  
*(Danthonia californica)*
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- RS— willow-leaved dock (EBCNPS: B)  
*(Rumex salicifolius var. salicifolius)*
- SR— ladies-tresses (EBCNPS: A1)  
*(Spiranthes romanzoffiana)*
- SA— ajuga hedge nettle (EBCNPS: A2)  
*(Stachys ajugoides ssp. ajugoides)*
- TH— wild hyacinth, white brodiaea (EBCNPS: C)  
*(Triteleia hyacinthina)*



KEY PLAN

REV	DESCRIPTION OF REVISION	BY	DATE



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DRAWN	IMC
CHECKED	CS
PEER REVIEWED	EJK
PROJECT MANAGER	CS
DATE	06/25/2007

RICHMOND FIELD STATION  
 EUCALYPTUS, FAR NORTH & 580  
 MEADOWS'  
 SENSITIVE PLANTS

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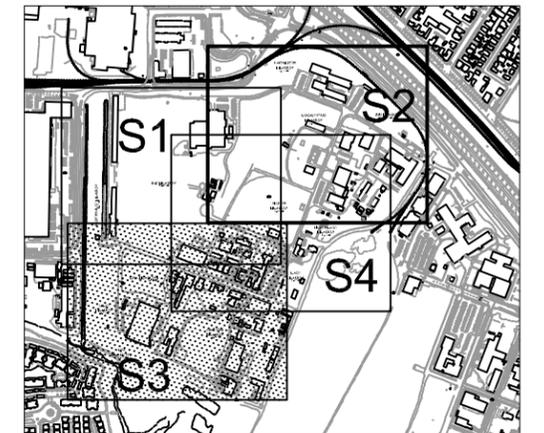


**LEGEND:**

— STUDY AREA BOUNDARY

**SENSITIVE PLANT LEGEND:**

- CO— suncups (EBCNPS: C)  
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*(Carex tumulicola)*
- CM— false pimpnel (EBCNPS: A1)  
*(Centunculus minimus)*
- CQ— Oregon timwort (EBCNPS: B)  
*(Cicendia quadrangularis)*
- DC— California oatgrass (EBCNPS: C)  
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- DE— coast spikeweed (EBCNPS: A2)  
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- EA— coastal eryngo, coyote thistle (EBCNPS: A2)  
*(Eryngium armatum)*
- ET— slender wheatgrass (EBCNPS: B)  
*(Elymus trachycaulus ssp. trachycaulus)*
- GH— hairy gumplant (EBCNPS: C)  
*(Grindelia hirsutula var. hirsutula)*
- HC— hayfield tarweed (EBCNPS: B)  
*(Hemizonia congesta)*
- HJ— foxtail barley (EBCNPS: A2)  
*(Hordeum jubatum)*
- JB— clustered toadrush (EBCNPS: C)  
*(Juncus bufonius var. congestus)*
- JP— brown-headed rush (EBCNPS: B)/spreading brown-headed rush (EBCNPS: B)  
*(Juncus phaeocephalus var. phaeocephalus & J. p. var. paniculatus)*
- NP— purple needlegrass (EBCNPS: C)  
*(Nassella pulchra)*
- RS— willow-leaved dock (EBCNPS: B)  
*(Rumex salicifolius var. salicifolius)*
- SR— ladies-tresses (EBCNPS: A1)  
*(Spiranthes romanzoffiana)*
- SA— ajuga hedge nettle (EBCNPS: A2)  
*(Stachys ajugoides ssp. ajugoides)*
- TH— wild hyacinth, white brodiaea (EBCNPS: C)  
*(Triteleia hyacinthina)*



KEY PLAN

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CHECKED	CS
PEER REVIEWED	EJK
PROJECT MANAGER	CS
DATE	06/25/2007

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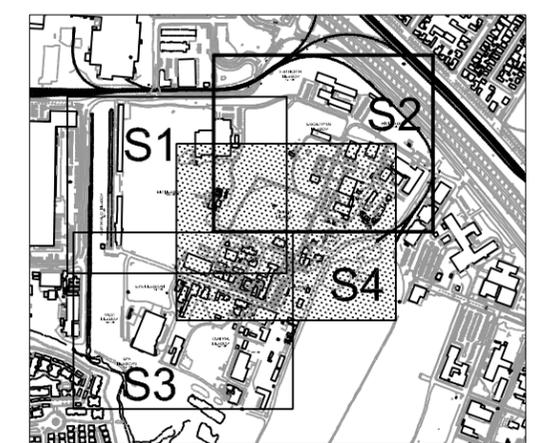


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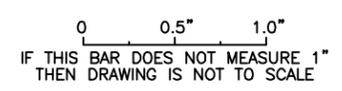
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PROJECT MANAGER	CS
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NORTH, EAST, GULL & NORTHEAST MEADOWS' SENSITIVE PLANTS		PROJECT	17325753
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