APPENDIX E-1

Biological Resources Assessment

Biological Resources Assessment

GENERAL MILLS PROJECT

VALLEJO, SOLANO COUNTY, CALIFORNIA

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF APPENDICES

1.0 INTRODUCTION

WRA, Inc. performed an assessment of biological resources at the 38 acre General Mills property (Project Area) in Vallejo, Solano County, California (Figure 1). The purpose of the assessment was to gather information necessary to determine the potential for special status species to occur in the Project Area. This report describes the results of the site visits, which assessed the Project Area for the (1) presence of special status species; (2) potential to support special status species; and (3) presence of other sensitive biological resources protected by local, state, and federal laws and regulations. This report also contains an evaluation of potential impacts to special status species and sensitive biological resources that may occur as a result of the proposed project and potential mitigation measures to compensate for those impacts.

A biological assessment provides general information on the potential presence of sensitive species and habitats. The biological assessment is not an official protocol level survey for listed species that may be required for project approval by local, state, or federal agencies. However, specific findings on the occurrence of any species or the presence of sensitive habitats may require that protocol surveys be conducted. This assessment is based on information available at the time of the study and on site conditions that were observed on the date of the site visit.

2.0 REGULATORY BACKGROUND

The following sections explain the regulatory context of the biological assessment, including applicable laws and regulations that were applied to the field investigations and analysis of potential project impacts.

2.1 Special Status Species

Special status species include those plants and wildlife species that have been formally listed, are proposed as endangered or threatened, or are candidates for such listing under the federal Endangered Species Act (ESA) or California Endangered Species Act (CESA). These Acts afford protection to both listed and proposed species.

In addition, California Department of Fish and Game (CDFG) Species of Special Concern, which are species that face extirpation in California if current population and habitat trends continue, U.S. Fish and Wildlife Service (USFWS) Birds of Conservation Concern, sensitive species included in USFWS Recovery Plans, and CDFG special status invertebrates are all considered special status species. Although CDFG Species of Special Concern generally have no special legal status, they are given special consideration under the California Environmental Quality Act (CEQA).

In addition to regulations for special status species, most birds in the United States, including non-status species, are protected by the Migratory Bird Treaty Act of 1918. Under this legislation, destroying active nests, eggs, and young is illegal.

Plant species on California Native Plant Society (CNPS) Lists 1 and 2 are also considered special status plant species. Impacts to these species are considered significant according to CEQA. CNPS List 3 plants have little or no protection under CEQA, but are included in this analysis for completeness.

Figure 1. Project Area Location Map

N

0 1,000 2,000 4,000 Feet

General Mills
Vallejo, CA

wra
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Date: August 2007
Basemap: USGS Topo Quad
Map By: Derek Chan
Filepath: L:\Acad 2000Files\17000\17038\gis\arcmap\Bio\Fig1_LocMap_20070817.mxd

Critical Habitat

Critical habitat is a term defined and used in the Federal Endangered Species Act as a specific geographic area that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. The FESA requires federal agencies to consult with the USFWS to conserve listed species on their lands and to ensure that any activities or projects they fund, authorize, or carry out will not jeopardize the survival of a threatened or endangered species. In consultation for those species with critical habitat, federal agencies must also ensure that their activities or projects do not adversely modify critical habitat to the point that it will no longer aid in the species' recovery. In many cases, this level of protection is similar to that already provided to species by the FESA "jeopardy standard." However, areas that are currently unoccupied by the species but which are needed for the species' recovery, are protected by the prohibition against adverse modification of critical habitat.

2.2 Sensitive Biological Communities

Sensitive biological communities include habitats that fulfill special functions or have special values, such as wetlands, streams, and riparian habitat. These habitats are regulated under federal regulations (such as the Clean Water Act), state regulations (such as the Porter-Cologne Act, the CDFG Streambed Alteration Program, and CEQA), or local ordinances or policies (City or County Tree Ordinances, Special Habitat Management Areas, and General Plan Elements).

Waters of the United States

The U.S. Army Corps of Engineers (Corps) regulates "Waters of the United States" under Section 404 of the Clean Water Act. "Waters of the U.S." are defined broadly as waters susceptible to use in commerce, including interstate waters and wetlands, all other waters (intrastate waterbodies, including wetlands), and their tributaries (33 CFR 328.3). Potential wetland areas, according to the three criteria used to delineate wetlands stated in the *Corps of Engineers Wetlands Delineation Manual* (1987), are identified by the presence of (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology. Areas that are inundated for sufficient duration and depth to exclude growth of hydrophytic vegetation are subject to Section 404 jurisdiction as "other waters" and are often characterized by an ordinary high water line (OHW). Other waters, for example, generally include lakes, rivers, and streams. In tidal areas, Section 404 jurisdiction extends to the "high tide line" (HTL) (33 CFR 328.4). The placement of fill material into "Waters of the U.S." (including wetlands) generally requires an individual or nationwide permit from the Corps under Section 404 of the Clean Water Act.

Waters of the State

The term "Waters of the State" is defined by the Porter-Cologne Act as "any surface water or groundwater, including saline waters, within the boundaries of the state." The Regional Water Quality Control Board (RWQCB) protects all waters in its regulatory scope, but has special responsibility for wetlands, riparian areas, and headwaters. These water bodies have high resource value, are vulnerable to filling, and are not systematically protected by other programs. RWQCB jurisdiction includes "isolated" wetlands and waters that may not be regulated by the Corps under Section 404. "Waters of the State" are regulated by the RWQCB under the State Water Quality Certification Program which regulates discharges of fill and dredged material under Section 401 of the Clean Water Act and the Porter-Cologne Water Quality Control Act. Projects that require a Corps permit, or fall under other federal jurisdiction, and have the potential to impact "Waters of the State," are required to comply with the terms of the Water Quality Certification determination. If a proposed project does not require a federal permit, but does involve dredge

or fill activities that may result in a discharge to "Waters of the State," the RWQCB has the option to regulate the dredge and fill activities under its state authority in the form of Waste Discharge Requirements or Certification of Waste Discharge Requirements.

Streams, Lakes, and Riparian Habitat

Streams and lakes, as habitat for fish and wildlife species, are subject to jurisdiction by CDFG under Sections 1600-1616 of the State Fish and Game Code. Alterations to or work within or adjacent to streambeds or lakes generally require a 1602 Lake and Streambed Alteration Agreement. The term stream, which includes creeks and rivers, is defined in the California Code of Regulations (CCR) as follows: "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation" (14 CCR 1.72). In addition, the term stream can include ephemeral streams, dry washes, watercourses with subsurface flows, canals, aqueducts, irrigation ditches, and other means of water conveyance if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife (CDFG ESD 1994). Riparian is defined as, "on, or pertaining to, the banks of a stream;" therefore, riparian vegetation is defined as, "vegetation which occurs in and/or adjacent to a stream and is dependent on, and occurs because of, the stream itself" (CDFG ESD 1994). Removal of riparian vegetation also requires a Section 1602 Lake and Streambed Alteration Agreement from CDFG.

San Francisco Bay and Shoreline

The San Francisco Bay Conservation and Development Commission (BCDC) has regulatory jurisdiction, as defined by the McAteer-Petris Act, over the Bay and its shoreline, which generally consists of the area between the Bay shoreline and a line 100 feet landward of and parallel to the shoreline. Within the Project Area, BCDC has two areas of jurisdiction: San Francisco Bay and the Shoreline Band. These areas are defined in the McAteer-Petris Act (PRC Section 66610) as:

> San Francisco Bay, being all areas that are subject to tidal action from the south end of the Bay to the Golden Gate (Point Bonita-Point Lobos) and to the Sacramento River line (a line between Stake Point and Simmons Point, extended northeasterly to the mouth of Marshall Cut), including all sloughs, and specifically, the marshlands lying between mean high tide and five feet above mean sea level; tidelands (land lying between mean high tide and mean low tide); and submerged lands (land lying below mean low tide).
>
> A shoreline band consisting of all territory located between the shoreline of San Francisco Bay as defined above and a line 100 feet landward of and parallel with that line, but excluding any portions of such territory which are included in other areas of BCDC jurisdiction; provided that the Commission may, by resolution, exclude from its area of jurisdiction any area within the shoreline band that it finds and declares is of no regional importance to the Bay.

Other Sensitive Biological Communities

Other sensitive biological communities not discussed above include habitats that fulfill special functions or have special values. Natural communities considered sensitive are those identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game (CDFG). CDFG ranks sensitive communities as "threatened" or "very threatened" and keeps records of their occurrences in its Natural Diversity Database. Sensitive plant communities are

also identified by CDFG on their *List of California Natural Communities Recognized by the CNDDB*. Impacts to sensitive natural communities identified in local or regional plans, policies, regulations or by the CDFG or USFWS must be considered and evaluated under CEQA (California Code of Regulations: Title 14, Div. 6, Chap. 3, Appendix G). Specific habitats may also be identified as sensitive in City or County General Plans or ordinances.

Relevant Local Policies, Ordinances, Regulations

Solano County has developed an HCP which covers urban development, including Vallejo. The HCP does not include species or communities not otherwise listed in this report. However, if impacts to sensitive species or communities occur, additional mitigation may be required by the HCP. Also, limits are placed on the percentages of take for some sensitive species and communities.

3.0 METHODS

The Project Area was traversed on foot to determine (1) plant communities present within the Project Area, (2) if existing conditions provided suitable habitat for any special status plant or wildlife species, and (3) if sensitive habitats are present. All plant and wildlife species encountered were recorded, and are summarized in Appendix A.

3.1 Biological Communities

Prior to the site visit, the Soil Survey of Solano County, California [U.S. Department of Agriculture (USDA) 1977] was examined to determine if any unique soil types that could support sensitive plant communities and/or aquatic features were present in the Project Area. Biological communities present in the Project Area were classified based on existing plant community descriptions described in the *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986). However, in some cases it is necessary to identify variants of community types or to describe non-vegetated areas that are not described in the literature. Biological communities were classified as sensitive or non-sensitive as defined by CEQA and other applicable laws and regulations.

3.1.1 Non-sensitive Biological Communities

Non-sensitive biological communities are those communities that are not afforded special protection under CEQA, and other state, federal, and local laws, regulations and ordinances. These communities may, however, provide suitable habitat for some special status plant or wildlife species and are identified or described in Section 4.1.1 below.

3.1.2 Sensitive Biological Communities

Sensitive biological communities are defined as those communities that are given special protection under CEQA and other applicable federal, state, and local laws, regulations and ordinances. Applicable laws and ordinances are discussed above in Section 2.0. Special methods used to identify sensitive biological communities are discussed below.

Wetlands and Waters

The Project Area was surveyed to determine if any wetlands and waters potentially subject to jurisdiction by the Corps, RWQCB, BCDC, or CDFG were present. On June 25 , 2007, WRA conducted a routine wetland delineation in the Study Area to determine the presence of potential wetlands and waters subject to federal jurisdiction under Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act (Appendix D). See Appendix D for a description of the methods used and the complete results of the delineation.

Other Sensitive Biological Communities

The Project Area was evaluated for the presence of other sensitive biological communities, including riparian areas and sensitive plant communities recognized by CDFG. If present in the Project Area, these sensitive biological communities were mapped and are described in the Section 4.1.2 below.

3.2 Special Status Species

3.2.1 Literature Review

Potential occurrence of special status species in the Project Area was evaluated by first determining which special status species occur in the vicinity of the Project Area through a literature and database search. Database searches for known occurrences of special status species focused on the Benicia 7.5 minute USGS quadrangle and the eight surrounding USGS quadrangles. The following sources were reviewed to determine which special status plant and wildlife species have been documented to occur in the vicinity of the Project Area:

- California Natural Diversity Database records (CNDDB) (CDFG 2007)
- USFWS quadrangle species lists (USFWS 2007)
- CNPS Electronic Inventory records (CNPS 2007)
- CDFG publication “California’s Wildlife, Volumes I-III” (Zeiner et al. 1990)
- CDFG publication “Amphibians and Reptile Species of Special Concern in California” (Jennings 1994)
- A Field Guide to Western Reptiles and Amphibians (Stebbins, R.C. 2003)
- University of California at Davis Information Center for the Environment Distribution Maps for Fishes in California (2007)
- National Marine Fisheries Service Distribution Maps for California Salmonid Species (2007)
- A report documenting results of a March 2007 reconnaissance plant survey:“General Mills Plant Survey” (Kelly 2007)

3.2.2 Site Assessment

A site visit was made to the Project Area to search for suitable habitats for species identified in the literature review as occurring in the vicinity. The potential for each special status species to occur in the Project Area was then evaluated according to the following criteria:

1) No Potential. Habitat on and adjacent to the site is clearly unsuitable for the species requirements (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime).

2) Unlikely. Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality. The species is not likely to be found on the site.

3) Moderate Potential. Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable. The species has a moderate probability of being found on the site.

4) High Potential. All of the habitat components meeting the species requirements are present and/or most of the habitat on or adjacent to the site is highly suitable. The species has a high probability of being found on the site.

5) Present. Species is observed on the site or has been recorded (i.e. CNDDB, other reports) on the site recently.

The site assessment is intended to identify the presence or absence of suitable habitat for each special status species known to occur in the vicinity in order to determine its potential to occur in the Project Area. The site visit does not constitute a protocol-level survey and is not intended to determine the actual presence or absence of a species; however, if a special status species is observed during the site visit, its presence will be recorded and discussed. Protocol level surveys were completed for rare plants (Kelly 2007, Appendix E) and monarch winter roosts. Appendix B presents the evaluation of potential for occurrence of each special status plant and wildlife species known to occur in the vicinity of the Project Area with their habitat requirements, potential for occurrence, and rationale for the classification based on criteria listed above. Recommendations for further surveys are made in Section 5.0 below for species with a moderate or high potential to occur in the Project Area.

4.0 RESULTS

The Project Area is a former flour mill complex and an adjacent hillside in Vallejo, Solano County, California. It is bordered to the east and north by residential and commercial development. To the south, there is a small area of open space, predominately non-native grassland. The Project Area is bordered on the west by Mare Island Strait. Elevations in the Project Area range from 0 to 140 feet (0 to 43 meters).

The industrial buildings are located in the western portion of the Project Area. It includes industrial buildings, gravel roads, and paved lots and staging areas and is mostly devoid of vegetation.

The hillside adjacent to the eastern side of the industrial complex has a southwestern aspect and is undeveloped with the exception of a residence and associated buildings. The southern portion of the hillside supports groves of exotic ornamental trees and shrubs, dominated by acacia (*Acacia* spp.), eucalyptus (*Eucalyptus* spp.), and pines (*Pinus* spp.). A few scattered native trees and shrubs were also noted, including coast live oak (*Quercus agrifolia*) and toyon (*Heteromeles arbutifolia*). The northern portion of the hillside supports disturbed annual grassland that is disced annually in early spring. The understory of the eucalyptus stand is also disced regularly. Small areas of less-disturbed grassland exist toward the southern end of the site on the steep slopes, and along the margins of the disced areas.

The western edge of the Project Area includes shoreline habitat, with one small patch of coastal saltmarsh habitat along the southern portion of the Project Area shoreline. The rest of this southern shoreline is sandy and rocky and is bordered by a row of ornamental shrubs, while the northern shoreline is composed of rip-rap.

The following sections present the results and discussion of the biological assessment within the Project Area.

4.1 Biological Communities

The Project Area is primarily composed of non-sensitive biological communities: non-native grassland, non-native trees and shrubs, and developed industrial areas. Several sensitive biological communities were found in the Project Area. A small area of coastal salt marsh and a small seasonal wetland were located in the southern portion of the Project Area (Figure 2). Additionally, tidal waters and a shoreline band are present in the Project Area.

4.1.1 Non-sensitive biological communities

Non-native Grassland

Non-native grassland typically occurs in open areas of valleys and foothills throughout California, usually on fine textured clay or loam soils that are somewhat poorly drained (Holland 1986). Non-native grassland is typically dominated by non-native annual grasses and forbs along with scattered native wildflowers. The non-native annual grassland occurring on portions of the Project Area hillside tended to be weedy and disturbed. Since most of the Project Area grassland had been recently disced at the time of the field visit, it was difficult to identify all the species that occurred there. Dominant species appeared to be Johnsongrass (*Sorghum halepense*), wild oats (*Avena* sp.), fennel (*Foeniculum vulgare*), and mustard (*Brassica nigra*). Regular discing reduces the suitability of the grassland habitat for special status wildlife species. Wildlife species observed in this community were the Turkey Vulture (*Cathartes aura*), swallowtail butterfly (*Papilio sp.*), and cabbage white butterfly (*Pieris rapae*).

Non-native Trees and Shrubs

Stands of non-native trees occur in the southern portion of the Project Area hillside, and a row of exotic shrubs appears to have been planted along the southern shoreline. Dominant species in the groves of trees are non-native species including acacia (*Acacia* spp.), eucalyptus (*Eucalyptus* spp.), and pines (*Pinus* spp.). Exotic shrubs including Spanish broom (*Spartium junceum*) are also present among the trees. Much of the understory of these groves is disced and/or consists of leaf litter from the trees; therefore, habitat for native plants is limited. Wildlife species observed in this habitat were the Mourning Dove (*Zenaida macroura*), Barn Swallow (*Hirundo rustica*), Bushtit (*Psaltriparus minimus*), Hairy Woodpecker (*Picoides villosus*), American Crow (*Corvus brachyrynchus*), and squirrel (*Sciurus sp.*).

Figure 2. Biological Communities Present in the Project Area

General Mills
Vallejo, California

N

0 150 300 600 Feet

wra
ENVIRONMENTAL CONSULTANTS

Date: August 2007
Aerial: TerraServer, 2004
Map By: Derek Chan
Filepath: L:\Acad 2000Files\17000\17038\gis\arcmap\Bio\BioComm_20070817.mxd

Developed Industrial Areas

Developed areas within the Study Area consist of paved areas and roads containing only sparse vegetation. These areas provide little to no value as habitat for plant and wildlife species due to the high level of disturbance and human activity. Plant species present in these areas include chicory (*Cichorium intybus*) and bristly ox-tongue (*Picris echioides*). Buildings in this portion of the Study Area have the potential to provide suitable nesting or roosting habitat for native wildlife species such as bats and birds. However, no wildlife species were observed utilizing this portion of the Study Area during the site visit.

4.1.2 Sensitive Biological Communities

Northern Coastal Salt Marsh

Northern Coastal Salt Marsh consists of salt-tolerant hydrophytes forming moderate to dense cover and is usually found along sheltered inland margins of bays, lagoons, and estuaries (Holland 1986). This plant community occurs in the Project Area on a small portion (0.01 acres) of the southern shoreline along Mare Island Strait. The dominant species in this community are salt grass (*Distichlis spicata*) and jaumea (*Jaumea carnosa*). No wildlife species were observed in this community, and due to its small size and lack of extensive pickleweed, is unlikely to support any special status species.

Seasonal Wetland

Seasonal wetland plant communities are not described in Holland (1986), but occur in swales and depressions that are ponded during the rainy season for sufficient duration to support vegetation adapted to wetland conditions. Seasonal wetlands in California are highly variable in plant composition, depending on the length of ponding or inundation. They also generally lack the plant community assemblage typical of defined marshes and vernal pools. A small (0.02 acres) seasonal wetland plant community is present in the southern portion of the Project Area at the base of a steep hillside. Portions of this wetland were ponded during the late June field visit and may have perennial hydrology. The plant species were a mix of cattail (*Typha angustifolia*) in the wetter portions and species including Bermuda grass (*Cynodon dactylon*), bristly ox-tongue (*Picris echioides*) and willowherb (*Epilobium ciliatum*) in the drier portions. No wildlife species were observed in this community. Due to its small size, this wetland is unlikely to support any special status species.

A routine wetland delineation determined that the small seasonal wetland is potentially jurisdictional by the Corps (Appendix D). The wetland is dominated by FAC to OBL wetland species including cattail, Bermuda grass, willowherb, and bristly ox-tongue. The wettest area of the wetland, which may be better described as emergent marsh, has hydric soils characterized by histosols and was inundated or saturated at the time of the field visit. The drier areas of the wetland had moist soils exhibiting redoximorphic features. The source of wetland hydrology for this feature was presumed to be hillside runoff or a hillside seep.

The seasonal wetland mapped in Appendix D does not appear to connect to any other wetlands or waters. It is located in a slight depression at the base of a hillside approximately 50 feet from Mare Island Strait. In between the wetland and Mare Island Strait are ruderal grassland, a flat, dirt lot and a border of upland shrubs. The Corps would need to determine whether or not the seasonal wetland would be considered adjacent to Mare Island Strait and thus subject to jurisdiction, or whether it would be considered isolated.

Tidal Waters of the United States

Under Section 404 of the Clean Water Act, Corps jurisdiction over tidal waters extends to the high tide line (HTL) or the limit of adjacent wetlands. The HTL is locally calculated as +7.22 feet Mean Lower Low Water (MLLW) (+7.65 feet NAVD 88) from NOAA tidal datums (Appendix D). Because the vertical datum of the topographic basemap of the General Mills site is unknown, the location of the high tide line that delineates the limit of Section 404 jurisdiction, +7.65 feet NAVD 88, can only be approximated (Appendix D). However, it is assumed that the small area of coastal salt marsh would fall within the limits of Section 404 jurisdiction, since it is below the observed high tide line.

Under Section 10 of the 1899 Rivers and Harbors Act, Corps jurisdiction in San Francisco Bay extends to mean high water level (MHW), given as +5.30 feet MLLW (+5.73 feet NAVD 88)at the Mare Island Naval Shipyard, Carquinez Strait tidal datum station (NOAA 2005). Because the vertical datum of the topographic basemap of the General Mills site is unknown, the location of the mean high water level that delineates the limit of Section10 jurisdiction, +5.73 feet NAVD 88, can only be approximated (Appendix D).

Under the McAteer-Petris Act, BCDC jurisdiction in tidal waters of San Francisco Bay extends to five feet above mean sea level (MSL). MSL is given as +3.12 feet MLLW (+3.55 feet NAVD 88) at the Mare Island Naval Shipyard, Carquinez Strait tidal datum station (NOAA); therefore, BCDC jurisdiction in San Francisco Bay extends to +8.12 feet MLLW (+8.55 feet NAVD 88).

No fill is allowed in tidal waters without permits from these agencies.

Shoreline Band

BCDC shoreline band jurisdiction will extend 100 feet landward of and parallel with the +8.12 foot MLLW (+8.55 NAVD 88) elevation contour. A BCDC permit is required for construction within the shoreline band.

4.2 Special Status Species

4.2.1 Plants

Based upon a review of the resources and databases given in Section 2.3.1, 43 special status plant species have been documented in the vicinity of the Project Area (Appendix B). Those occurring within five miles of the Project Area are shown in Figure 3. Appendix B summarizes the potential for occurrence for each special status plant species occurring in the vicinity of the Project Area.

No special status plant species were observed in the Project Area during the assessment site visit in June 2007, or during the March 2007 reconnaissance plant survey (Kelly 2007, Appendix E). The purpose of the Kelly 2007 survey was to search for Johnny-jump-up (*Viola pedunculata*) and potential special status plant species. No Johnny-jump-up or special status plant species were found during the survey. All 43 species documented to occur in the vicinity of the Project Area are unlikely or have no potential to occur because the Project Area lacks suitable habitat and/or because the species were not observed during the March or June site visits.[1]

[1] Although the March and June site visits were primarily reconnaissance-level plant surveys, the wetland and salt marsh habitats were thoroughly surveyed for special status plants during the June site visit.

4.2.2 Wildlife

78 special status species of wildlife have been recorded in the vicinity of the Project Area (Appendix B). Those occurring within five miles of the Project Area are shown in Figure 4. Appendix B summarizes the potential for each of these species to occur in the Project Area. Species observed or having a high or moderate potential to occur on site include the following:

- Two special status wildlife species were observed flying over the Project Area during the site assessment, Caspian Tern (*Sterna caspia*) and Osprey (*Pandion haliaetus*).

- One sensitive species, monarch butterfly (*Danaus plexippus*), is documented to historically use the eucalyptus grove as a winter roost, and therefore was determined initially to have a high potential to occur in the Project Area (CNDDB 2007). A protocol level monarch winter roost survey was completed during the winter of 2007-2008, and no monarchs were observed in the Project Area (Appendix F). Therefore, it was determined that the Project Area does not provide a winter roost site for the monarch butterfly.

- One other species that has a high potential to occur in the Project Area is the Great Blue Heron (*Ardea herodias*).

- Seven species have a high potential to occur in the adjacent waters: sturgeon (*Acipenser medirostris*), Central California Coastal steelhead (*Oncorhynchus mykiss*), Central Valley spring-run chinook salmon (*Oncorhynchus tshawytscha*), Central Valley fall/late fall-run chinook (*Oncorhynchus tshawytscha*), Sacramento River winter-run chinook (*Onchorhynchus tshawytscha*), delta smelt (*Hypomesus transpacificus*), and Sacramento splittail (*Pogonichthys macrolepidotus*).

- Four species have a moderate potential to occur in the Project Area: long-eared myotis (*Myotis evotis*), Great Egret (*Ardea alba*), Cooper's Hawk (*Accipiter cooperii*), and Loggerhead Shrike (*Lanius ludovicianus*).

- The remaining 64 species documented to occur in the vicinity of the Project Area are unlikely or have no potential to occur. Special status wildlife species that have a moderate or high potential to occur in the Project Area, or have been documented in the Project Area, are discussed below.

4.2.2.1 Special Status Species Observed in the Project Area

Caspian Tern (*Sterna caspia*), FWS Bird of Conservation Concern. Nests in dense colonies on undisturbed islands, levees, or shores. Nests are scraped, unlined depressions in soil near water. Barren, or nearly barren, sites are preferred. This species was observed flying over the Project Area. However, it is unlikely to breed in the Project Area. Therefore, no impacts to this species are expected.

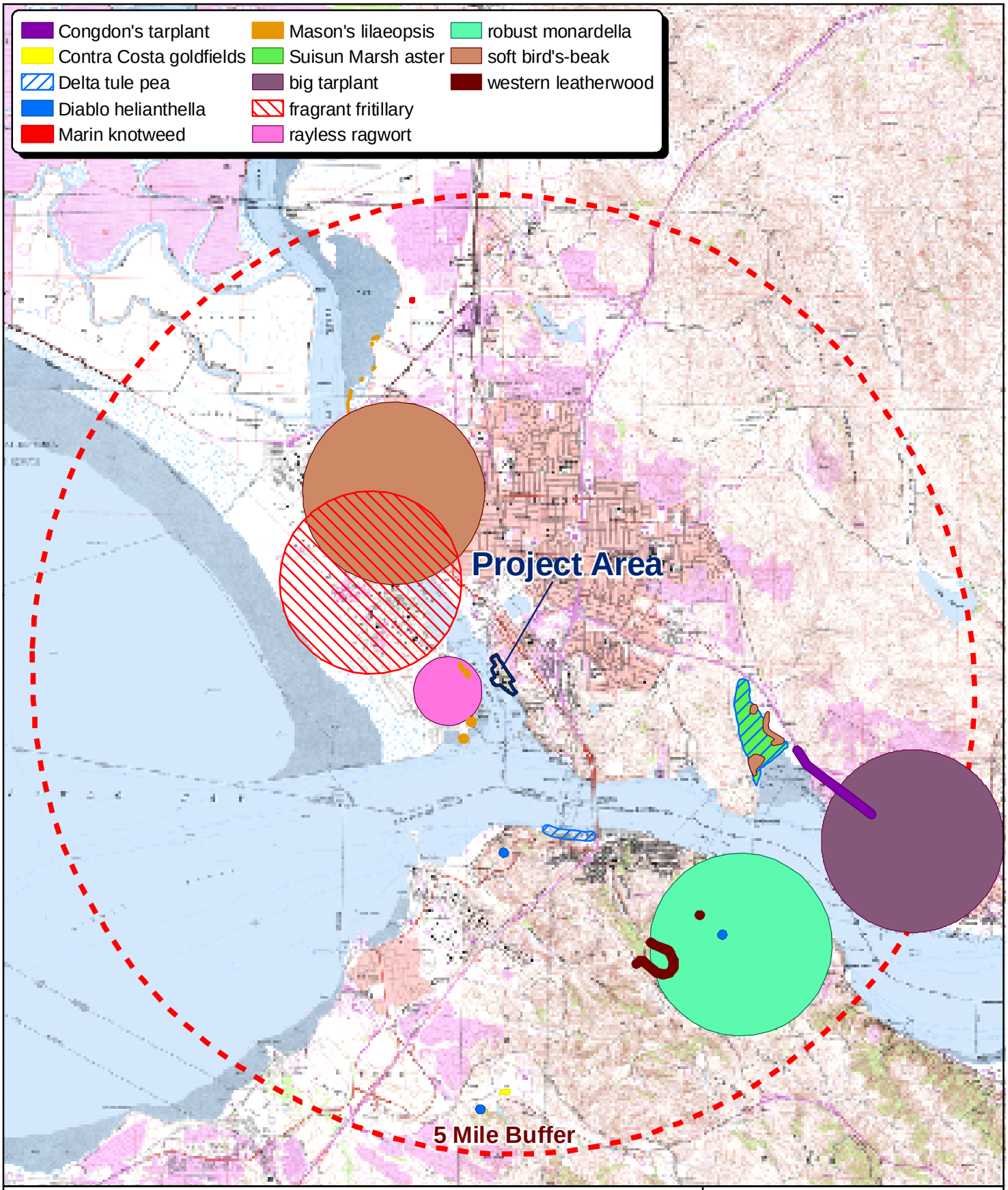

Figure 3. Special Status Plant Species Observed in the Vicinity of the the Project Area

N

0 0.5 1 2
Miles

General Mills
Vallejo, Solano County, CA

wra
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Date: June 2007
Basemap: USGS Topo Quad
Map By: Michael Rochelle
Filepath: I:/Acad2000/17000/17038/gis/Arcmap/CNDDBplants.mxd

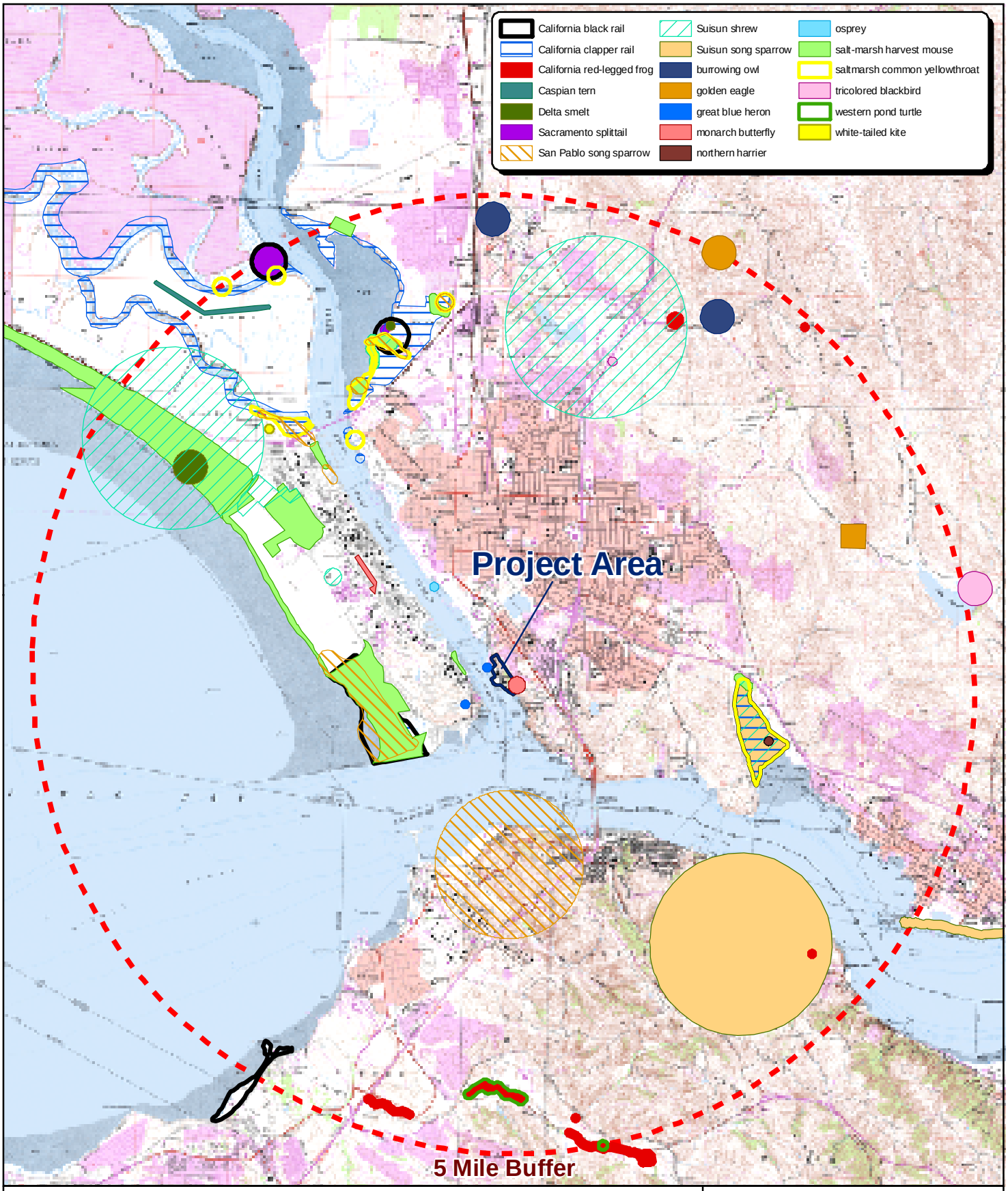

Figure 4. Special Status Wildlife Species Observed in the Vicinity of the Project Area

N

0 0.5 1 2
Miles

General Mills
Vallejo, Solano County, CA

wra
ENVIRONMENTAL CONSULTANTS

Date: June 2007
Basemap: USGS Topo Quad
Map By: Michael Rochelle
Filepath: I:/Acad2000/17000/17038/gis/Arcmap/CNDDBanimals.mxd

Osprey (*Pandion haliaetus*), CDFG Species of Special Concern. Habitat varies greatly, however, presence is based on an adequate supply of accessible fish within 10 miles of nest is required. Shallow waters (0.5–2 m deep) provide most accessible fish and are therefore high quality habitat. Trees, snags, large rocks and bluffs and, increasingly, artificial structures such as towers supporting electrical lines or cell-phone relays and channel markers are used to construct nests (Poole et al. 2002). This species was observed flying over the Project Area. However, the nest it was associated with was located on a light tower across Mare Island Strait. It is unlikely that this species would nest in the Project Area. Therefore, no impacts to this species are expected to occur.

4.2.2.2 Special Status Species with a High Potential to Occur

Mare Island Strait provides habitat for special-status fish species regulated by California Department of Fish and Game, NOAA Fisheries, and the US Fish and Wildlife Service including green sturgeon, federally-listed as Threatened; Sacramento splittail, a CDFG Species of Concern; Delta smelt, federally-listed Threatened; Central California Coast steelhead, federally-listed Threatened; Sacramento River winter-run Chinook, federally-listed Endangered; Central Valley spring-run Chinook, federally-listed as Threatened; and Central Valley fall-run Chinook, CDFG Species of Concern. NOAA Fisheries has designated areas important as resources to specific fisheries as Essential Fish Habitat (EFH) according to the Magnuson-Stevens Act (16 U.S.C. 1855(b)). Federal agencies must consult with the Secretary of Commerce on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH. The strait potentially provides EFH to a few species of economically valuable fish. The Project is unlikely to impact any EFH or listed species, as a full storm-water pollution prevention plan (SWPP) will be implemented, and no work is proposed below the mean high tide line.

Great Blue Heron (*Ardea herodias*), CDFG Protected Rookery Sites. This species feeds mostly in slow moving or calm freshwater, also along seacoasts. Occasionally in surf and fields. Nests in trees, bushes, on ground and artificial structures, usually near water (Butler 1992). The shoreline and thicket may provide suitable foraging and nesting for this species.

Monarch Butterfly (*Danaus plexippus*) None. Monarch winter roost sites are characterized by wind-protected tree groves with nectar and water sources nearby. This species has been documented to historically use the eucalyptus grove in the Project Area (CNDDB 2007, Appendix F). Protocol level surveys for monarch winter roosts were completed during the winter of 2007-2008. During these surveys no monarch butterflies were observed and several components of a suitable roost site, including abundant fresh water and dense understory, were determined to be missing. Therefore, it was determined that the Project Area does not provide a monarch winter roost site.

4.2.2.3 Special Status Species with a Moderate Potential to Occur

Long-eared Myotis (*Myotis evotis*), WBWG High Priority. This species is primarily a forest and woodland associated species. Day roosts are found in hollow trees, under exfoliating bark, rock outcrop crevices and buildings. Other roosts include caves, mines and under bridges. The unoccupied buildings may provide suitable roosting habitat for this species.

Great Egret (*Ardea alba*), CDFG Protected Rookery Sites. Rookery sites are located near marshes, tide-flats, irrigated pastures, and margins of rivers and lakes. Nests in large trees, and roosts in trees (Grinnell and Miller 1944, Cogswell 1977). Dense vegetation along the shoreline may provide roosting habitat for this species. Eucalyptus trees may provide suitable nesting habitat for this species.

Cooper's Hawk (*Accipiter cooperi*), CDFG Species of Special Concern. Cooper's hawks are well distributed and occur in varied habitats including; deciduous, mixed, and evergreen forests and riparian woodlands. This species is tolerant of human disturbance and habitat fragmentation and has been found to increasingly breed in suburban and urban areas (Curtis et al. 2006). This species nests in extensive forests, woodlots of 4–8 ha, and occasionally in isolated trees in more open areas. Trees throughout the Project Area may provide suitable nesting habitat for this species.

Loggerhead Shrike (*Lanius ludovicianus*) CDFG Species of Special Concern. This species prefers open habitats with scattered shrubs, trees, pots, utility lines from which to forage for large insects. The nest is well concealed above the ground in a densely-foliaged shrub or tree. The open grassland habitat and dense shrubs may provide suitable foraging and nesting habitat for this species.

5.0 SUMMARY AND RECOMMENDATIONS

The following sections present recommendations for future studies and/or measures to avoid or reduce impacts to these species and sensitive habitats.

5.1 Biological Communities

Most of the Project Area is comprised of developed industrial areas, non-native trees and shrubs, and non-native grassland, which are not sensitive biological communities. However, the Project Area does contain approximately 0.01 acres of Northern Coastal Salt Marsh and 0.02 acres of Seasonal Wetland, as well as tidal waters and a shoreline band. Northern Coastal Salt Marsh is considered a sensitive plant community by CDFG. Seasonal wetland is not identified as a sensitive habitat by CDFG, but it is regulated by the RWQCB and may also fall under the jurisdiction of the U.S. Army Corps of Engineers.

WRA recommends submitting the delineation report to the Corps for verification, although this is not required if project plans avoid the delineated wetlands and waters. A determination by the Corps is necessary to determine whether or not the seasonal wetland would be considered adjacent to Mare Island Strait and thus subject to Corps jurisdiction, or whether it would be considered isolated. Permits from the Corps, RWQCB, and BCDC may be necessary for any work in wetlands, the tidal areas, or the shoreline band.

5.2 Special Status Plant Species

None of the 43 special status plant species known to occur in the vicinity of the Project Area are likely to occur in the Project Area, and many were determined to not be present in the Project Area based on lack of suitable habitat or because they were not seen during the March and June site visits. No further plant surveys are required.

5.3 Special Status Wildlife Species

Of the 78 special status wildlife species known to occur in the vicinity of the Project Area, 2 were observed, 8 were determined to have a high potential to occur in or in the adjacent waters of the Project Area, and 4 were determined to have a moderate potential to occur in the Project Area. Most of the species found in the review of background literature occur in habitats not found in the Project Area, such as vernal pools and riparian areas. Habitat suitability for grassland-associated

species in the Project Area is reduced due to regular discing of the site and adjacent development.

Two special status species of bird, Osprey and Caspian Tern, were observed flying over the Project Area during the site visit. These species are unlikely to breed in the Project Area, and forage only in the adjacent waters. Therefore, no impacts are expected to occur to these species, and no additional measures are necessary.

This assessment determined that one special status bat species may use the buildings in the Project Area for roosting. It is recommended that pre-construction surveys be done in all of the unoccupied buildings prior to any impacts to the buildings. In the event that bats are determined to use the buildings for roosting, exclusion measures should be implemented between September 1st and October 31st, prior to impacts to the buildings. Pre-construction surveys should be repeated to ensure that the buildings have been cleared of roosting bats. Exclusion materials must be removed by March 1st of the following year prior to the breeding season. For buildings that are unsuitable for the use of exclusion measures, daylighting techniques can be used to make the buildings unsuitable for bat roosting, followed by a minimum of two nights of avoidance to sufficiently allow bats to leave the structure prior to demolition activities. This may include activities such as the removal of a wall to allow light and wind to penetrate the roosting area. These activities are also recommended to occur between September 1st and October 31st. Mitigation for demolition of bat roosting habitat can be in the form of a bat house constructed on or near the site as alternative roosting habitat.

It was also determined that four bird species may use the Project Area for breeding and foraging. In addition, common birds may nest on the ground or in the trees within the Project Area. It is recommended that pre-construction breeding bird surveys be conducted within 30 days of ground disturbance or tree removal to avoid disturbance to active nests, eggs, and/or young of nesting birds. It is also recommended that any trees and shrubs in or adjacent to the Project Area that are proposed for removal and that could be used as nesting sites by Loggerhead Shrike, Great Blue Heron, Great Egret, or Cooper's Hawk be removed during the non-breeding season (September through February).

Seven fish species were determined to have the potential, or are documented to use the waters adjacent to the Project Area. No work is planned below the mean high tide line, and a full storm-water pollution prevention plan (SWPP) will be implemented with the project. Therefore, no impacts are expected to occur to these species, and no additional measures are necessary.

The monarch butterfly was also determined to potentially use the Project Area for winter roosting. In order to determine if a monarch winter roost site is present in the Project Area, two protocol level surveys were completed on November 30, 2007 and January 3, 2008 during the primary roosting period (Appendix F). Surveys were conducted in the early morning, for a minimum of 60 minutes, and at temperatures below 55 degrees, in order to improve the probability of detecting monarchs if they were present. A habitat assessment conducted on November 30, 2007 found that while most necessary elements of a winter roost site were present, some elements were only marginally suitable. Two aspects of the eucalyptus grove that may make it marginal as a primary roost habitat are the lack of a significant understory and the lack of a significant fresh water source early in the roosting season. The two surveys completed during peak roosting season resulted in the sighting of no monarchs. Based on these results, it was determined that the eucalyptus grove in the Project Area does not provide a primary winter roost site for the monarch butterfly.

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APPENDIX A

LIST OF OBSERVED PLANT AND ANIMAL SPECIES

Appendix A. Plants and animals observed in the General Mills Study Area on June 25, 2007

Species	**Common Name**
Plants	
Acacia melanoxylon	blackwood acacia
Acacia spp.	acacia
Acer macrophyllum	big leaf maple
Avena sp.	wild oats
Brassica nigra	black mustard
Brassica rapa	field mustard
Bromus diandrus	ripgut brome
Bromus hordeaceus	soft chess
Carduus pycnocephalus	Italian thistle
Cichorium intybus	chicory
Cirsium vulgare	bull thistle
Convolvulus arvensis	bindweed
Cynara cardunculus	artichoke thistle
Cynodon dactylon	Bermuda grass
Distichlis spicata	salt grass
Epilobium ciliatum	willowherb
Eschscholzia californica	California poppy
Eucalyptus globulus	blue gum
Eucalyptus spp.	eucalyptus
Ficus sp.	fig
Foeniculum vulgare	fennel
Geranium dissectum	geranium
Hedera helix	English ivy
Heteromeles arbutifolia	toyon
Hordeum murinum	barley
Jaumea carnosa	jaumea
Juglans regia	English walnut

Juniperus sp.	ornamental juniper
Lactuca serriola	prickly lettuce
Larix sp.?	ornamental larch
Lepidium latifolium	peppergrass
Lolium multiflorum	Italian ryegrass
Malva neglecta	common mallow
Malvella leprosa	alkali mallow
Medicago polymorpha	California bur clover
Melilotus indica	sourclover
Nerium oleander	oleander
Paspalum dilatatum	dallis grass
Phalaris aquatica	Harding grass
Phalaris minor	littleseed canarygrass
Phoenix sp.?	ornamental palm
Phyla nodiflora	lippia
Picris echioides	bristly ox-tongue
Pinus attenuata	knobcone pine
Pinus muricatus	bishop pine
Plantago lanceolata	plantain
Platanus racemosa	sycamore
Polypogon monspeliensis	rabbitsfoot grass
Portulaca oleracea	common purslane
Prunus sp.	cultivated cherry or plum
Quercus agrifolia	coast live oak
Raphanus sativus	radish
Rosa sp.	rose
Rubus discolor	blackberry
Rumex crispus	curly dock
Rumex pulcher	fiddle dock
Salicornia virginica	pickleweed

Scirpus cernuus	annual tule
Sonchus asper ssp. *asper*	prickly sow thistle
Sorghum halepense	Johnsongrass
Spartium junceum	Spanish broom
Spergularia marina	sand-spurrey
Stellaria media	common chickweed
Toxicodendron diversilobum	poison oak
Tribulus terrestris	puncture vine
Typha angustifolia	narrow leaved cattail
Wildlife	
Mimus polyglottus	Northern Mockingbird
Pandion haliaetus	Osprey
Zenaida macroura	Mourning Dove
Hirundo rustica	Barn Swallow
Psaltriparus minimus	Bushtit
Junco hyemalis	Dark-eyed Junco
Aphelocoma californica	Western Scrub-jay
Picoides villosus	Hairy Woodpecker
Cathartes aura	Turkey Vulture
Sterna caspia	Caspian Tern
Corvus brachyrynchus	American Crow
Tyto alba	Barn Owl
Corvus corax	Common Raven
Carpodacus mexicanus	House Finch
Sciurus sp.	squirrel
Papilio sp.	swallowtail butterfly
Pieris rapae	cabbage white

APPENDIX B

POTENTIAL FOR SPECIAL STATUS PLANT AND WILDLIFE SPECIES TO OCCUR IN THE PROJECT AREA

Appendix B. Potential for Special Status Plant and Wildlife Species to Occur in the Project Area. List compiled from searches of the California Department of Fish and Game (CDFG) Natural Diversity Database (June 2007), U.S. Fish and Wildlife Service (USFWS) Species Lists, and California Native Plant Society (CNPS 2007) Electronic Inventory for the Benicia and eight surrounding USGS 7.5' quadrangles, and from a review of other CDFG lists and publications (Jennings and Hayes 1994, Zeiner et al. 1990).

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Mammals				
Suisun ornate shrew *Sorex ornatus sinuosus*	CSC	Requires dense low-lying cover and driftweed and other litter above the mean hightide line for nesting and foraging.	**Not Present.** Suitable nesting and foraging habitat are not available in the Project Area.	No further actions are recommended for this species.
Townsend's western big-eared bat *Corynorhinus townsendii townsendii*	CSC, WBWG	Primarily found in rural settings in a wide variety of habitats including oak woodlands and mixed coniferous-deciduous forest. Day roosts highly associated with caves and mines. Very sensitive to human disturbance.	**Not Present.** Site is regularly disturbed by human activity and suitable day roosts are not available in the Project Area.	No further actions are recommended for this species.
small-footed myotis *Myotis ciliolabrum*	BLM, WBWG medium priority	Commonly found in arid uplands of California. Feeds on a variety of small flying insects. Seeks cover in caves, buildings, mines, crevices, and occasionally under bridges.	**Not Present.** Project Area is outside species current range.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
long-eared myotis *Myotis evotis*	BLM, WBWG medium priority	This species has been found in nearly all brush, woodland, and forest habitats, from sea level to at least 2700 m (9000 ft), but coniferous woodlands and forests seem to be preferred. Day roosts in hollow trees, under exfoliating bark, rock outcrop crevices and buildings. Other roosts include caves, mines and under bridges.	**Moderate Potential.** Brush and woodland habitat are present in the Project Area. Abandoned buildings may provide day and night roosts for this species.	Pre-construction surveys are recommended prior to any impacts to the abandoned buildings.
fringed myotis *Myotis thysanodes*	WBWG	Associated with a wide variety of habitats including mixed coniferous-deciduous forest and redwood/sequoia groves. Buildings, mines and large snags are important day and night roosts.	**Unlikely.** Suitable forest habitat is not present in the Project Area.	Pre-construction surveys are recommended prior to any impacts to the abandoned buildings.
long-legged myotis *Myotis volans*	WBWG	Generally associated with woodlands and forested habitats. Large hollow trees, rock crevices and buildings are important day roosts. Other roosts include caves, mines and buildings.	**Unlikely.** Project Area is adjacent to species current range, but suitable woodland habitat is not present in the Project Area.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Yuma myotis *Myotis yumanensis*	BLM, WBWG low priority	Known for its ability to survive in urbanized environments. Also found in heavily forested settings. Day roosts in buildings, trees, mines, caves, bridges and rock crevices. Night roosts associated with man-made structures. This species usually feeds over water sources such as ponds, streams and stock tanks.	**Unlikely.** Suitable roosting habitat is present in the Project Area, but no freshwater sources are available in or adjacent to the Project Area.	No further actions are recommended for this species.
greater western mastiff bat *Eumops perotis californicus*	CSC, WBWG	Found in a wide variety of habitat. Distribution appears to be tied to large rock structures which provide suitable roosting sites, including cliff crevices and cracks in boulders.	**Not Present.** No large rock structures are present in the Project Area.	No further actions are recommended for this species.
big free-tailed bat *Nyctinomops macrotis*	CSC, WBWG	Occurs rarely in low-lying arid areas. Requires high cliffs or rocky outcrops for roosting sites.	**Not Present.** No cliffs or rocky outcrops are present in the Project Area.	No further actions are recommended for this species.
riparian brush rabbit *Sylvilagus bachmani riparius*	FE, SE	Forage within or very close to brushy cover, along trails, and fire breaks in riparian areas.	**Not Present.** No riparian habitat is present in the Project Area. Project Area is outside species current range.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
San Joaquin pocket mouse *Perognathus inornatus inornatus*	BLM sensitive	Occurs in dry, open grasslands or scrub areas on fine-textured soils between 350 and 600m. Forages on seeds, green vegetation and insects.	**Unlikely.** The Project Area is adjacent to the western edge of the species' current range. Grassland areas appear to be regularly disced.	No further actions are recommended for this species.
salt-marsh harvest mouse *Reithrodontomys raviventris*	FE, SE	Primary habitat in pickleweed-dominated saline emergent marshes of San Francisco Bay. Require adjacent upland areas for escape from high tides.	**Not Present.** Suitable marsh habitat is not present in the Project Area.	No further actions are recommended for this species.
riparian (San Joaquin Valley) woodrat *Neotoma fuscipes riparia*	FE, CSC	Found in riparian areas along San Joaquin, Stanlislaus, Tuolumne Rivers. Requires mix of brush and trees with suitable nesting areas in trees, snags, and logs.	**Not Present.** Suitable riparian habitat is not present in the Project Area. The project Area is outside the species current range.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
San Francisco dusky-footed woodrat *Neotoma fuscipes annectens*	CSC	Occurs in forest habitats of moderate canopy and moderate to dense understory. Also found in chaparral habitats. Feeds mainly on woody plants: live oak, maple, coffeeberry, alder, and elderberry	**Unlikely.** Understory of eucalyptus forest is disced, and little understory habitat is present. Small areas of dense understory are present in the vicinity of the abandoned structures. No woodrat middens were seen during the initial site visit.	No further actions are recommended for this species.
American badger *Taxidea taxus*	CSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Requires friable soils and open, uncultivated ground. Preys on burrowing rodents.	**Unlikely.** The majority of areas under the canopy and in the open field are regularly disced.	No further actions are recommended for this species.
Birds				
Common Loon *Gavia immer*	CSC	Winter in estuarine and subtidal marine habitats along coast, San Francisco Bay.	**Unlikely.** May forage along tideline, but suitable estuarine and subtidal habitats are not present in the Project Area.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
California Brown Pelican *Pelecanus occidentalis californicus*	FE, SE, CFP	Found in estuarine, marine subtidal, and marine pelagic waters along the coast. Nest on rocky or low brushy slopes of undisturbed islands.	**Unlikely.** May forage over the adjacent strait, but suitable estuarine and subtidal areas not present in the Project Area.	No further actions are recommended for this species.
Great Blue Heron *Ardea herodias*	CDF: sensitive	Rookery sites in close proximity to foraging areas: marshes, lake margins, tide-flats, rivers and streams, wet meadows.	**High Potential.** Dense vegetation along the strait may provide suitable roosting habitat and tall eucalyptus trees may provide nesting habitat for this species. This species is documented in the Project Area.	Breeding bird surveys should be conducted for any activities occurring between January 1st and August 31st.
Great Egret *Ardea alba*	CDF: sensitive	Rookery sites located near marshes, tide-flats, irrigated pastures, and margins of rivers and lakes. Nests in large trees, and roosts in trees.	**Moderate Potential.** Dense vegetation along the strait may provide suitable roosting habitat and tall eucalyptus trees may provide nesting habitat for this species.	Breeding bird surveys should be conducted for any activities occurring between January 1st and August 31st.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
White-faced Ibis *Plegadis chihi*	CSC	Prefers to feed in fresh emergent wetland, shallow lacustrine waters, and muddy ground of wet meadows and irrigated or flooded pastures and croplands.	**Not Present.** Suitable freshwater habitat is not present in the Project Area.	No further actions are recommended for this species.
Cooper's Hawk *Accipiter cooperii*	CSC	Associated with open or interrupted woodland and riparian habitats in the Coast ranges and foothills surrounding the Central Valley. Nest sites mainly in riparian growths of deciduous trees, as in canyon bottoms on river flood-plains; also nests in live oaks.	**Moderate Potential.** Suitable woodland nesting habitat may be present in the Project Area.	Breeding bird surveys should be conducted for any activities occurring between January 1st and August 31st.
Sharp-shinned Hawk *Accipiter striatus*	CSC	This species is a fairly common migrant and winter visitor throughout California and is found in a variety of habitats, especially woodlands. It usually nests in dense small-tree stands of conifers near water. Preferred roost sites are within intermediate to high-canopy forest areas.	**Not Present.** Suitable forest habitat is not present in the Project Area.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Golden Eagle *Aquila chrysaetos*	CSC, CFP	Found in rolling foothill and mountain areas, sage-juniper flats, dessert. Cliff-walled canyons provide nesting habitat in most parts of range.	**Unlikely.** Species may forage over the Project Area, but suitable cliff walls are not present in the Project Area.	No further actions are recommended for this species.
Ferruginous Hawk *Buteo regalis*	CSC	Frequents open grasslands, sagebrush flats, desert scrub, low foothills surrounding valleys and fringes of pinyon-juniper habitats.	**Unlikely.** This species may forage over the grassland habitat, but breeding does not occur in California.	No further actions are recommended for this species.
Swainson's Hawk *Buteo swainsoni*	ST	Breeds in stands with few trees in juniper-sage flats, riparian areas and oak savannah. Requires adjacent suitable foraging areas such as grasslands or grain fields supporting rodent populations.	**Not Present.** Project Area is outside species' current range.	No further actions are recommended for this species.
White-tailed Kite *Elanus leucurus*	CFP	Year-long resident of coastal and valley lowlands; rarely found away from agricultural areas. Preys on small diurnal mammals and occasional birds, insects, reptiles, and amphibians.	**Unlikely.** No suitable agricultural areas are present near the Project Area.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Bald Eagle *Haliaeetus leucocephalus*	FD, SE, CFP	Requires large bodies of water, or free-flowing rivers with abundant fish adjacent snags or other perches. Nests in large, old-growth, or dominant live tree with open branchwork.	**Unlikely.** This species may forage in the waters adjacent to the Project Area.	No further actions are recommended for this species.
American Peregrine Falcon *Falco peregrinus anatum*	FD, SE, CFP	Winters throughout Central Valley. Requires protected cliffs and ledges for cover. Feeds on a variety of birds, and some mammals, insects, and fish.	**Not Present.** Suitable high cliffs are not present in the Project Area.	No further actions are recommended for this species.
Osprey *Pandion haliaetus*	CSC, CDF sensitive	(Nesting) Frequents ocean shores, bays, fresh-water lakes, and larger streams. Prefers large trees, snags and dead-topped trees near large water bodies for cover and nesting. May travel 5-6 miles from nest to fishing areas.	**Present.** Species seen flying over the Project Area. An active nest was observed on the far side of Mare Island Strait. Suitable snag or human-made structures are not present in the Project Area, but are present adjacent.	Breeding bird surveys should be conducted for any activities occurring between January 1st and August 31st.
Black Rail *Laterallus jamaicensis coturniculus*	ST, CFP	Rarely seen resident of saline, brackish, and fresh emergent wetlands in the San Francisco Bay area. Nest in dense stands of pickleweed	**Not Present.** Suitable emergent wetland habitat is not present in the Project Area.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
California Clapper Rail *Rallus longirostris obsoletus*	FE, SE	Found in tidal salt marshes of the San Francisco Bay. Require mudlfats for foraging and dense vegetation on higher ground for nesting.	**Not Present.** Suitable emergent wetland habitat is not present in the Project Area.	No further actions are recommended for this species.
Western Snowy Plover *Charadrius alexandrinus nivosus*	FT, CSC, BCC, RP	(Nesting) Federal listing applies only to the Pacific coastal population. Found on sandy beaches, salt pond levees and shores of large alkali lakes. Requires sandy, gravelly or friable soils for nesting.	**Not Present.** Suitable nesting habitat is not present in the Project Area.	No further actions are recommended for this species.
Long-billed Curlew *Numenius americanus*	CSC, BCC	Winters in large coastal estuaries, upland herbaceous areas, and croplands. Breeds in northeastern California in wet meadow habitat.	**Unlikely.** May forage over the Project Area during the winter.	No further actions are recommended for this species.
California Least Tern *Sterna antillarum browni*	FE, SE, CFP	(Nesting colony) nests along the coast from San Francisco Bay south to northern Baja California. Breeding colonies in San Francisco Bay found in abandoned salt ponds and along estuarine shores. Colonial breeder on barren or sparsely vegetated, flat substrates near water.	**Not Present.** Suitable flat shore habitat not present in the Project Area.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Caspian Tern (nesting colony) *Sterna caspia*	BCC	Nests in small colonies inland and along the coast at fresh-water lakes and marshes.	**Present.** This species was observed flying over the Project Area. However, nesting habitat is not present in the Project Area.	This species is unlikely to nest in the Project Area. No impacts are likely to result from project activities. Therefore, no further actions are recommended for this species.
Western Yellow-billed Cuckoo *Coccyzus americanus occidentalis*	FC, SE	Found in deep forest riparian areas.	**Not Present.** Suitable forest riparian habitat is not present in the Project Area.	No further actions are recommended for this species.
Western Burrowing Owl *Athene cunicularia hypugea*	CSC	Frequents open grasslands and shrublands with perches and burrows. Preys upon insects, small mammals, reptiles, birds, and carrion. Nests and roosts in old burrows of small mammals.	**Unlikely.** No burrows of sufficient size were observed during the site visit. Open field is disked regularly.	No further actions are recommended for this species.
Short-eared Owl *Asio flammeus*	CSC	Found in open, treeless areas with elevated sites for perches and dense vegetation for roosting and nesting.	**Not Present.** Few suitable perches are present in the Project Area, and only small regularly disturbed patches of dense vegetation are available for nesting. The majority of the site is disced regularly.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Vaux's Swift *Chaetura vauxi*	CSC	Forages high in the air over most terrain and habitats but prefers rivers/lakes. Requires large hollow trees for nesting.	**Not Present.** Large hollow trees are not available in the Project Area which is outside current range.	No further actions are recommended for this species.
Rufous Hummingbird *Selasphorus rufus*	BCC	Found in a wide variety of habitats that provide nectar-producing flowers. A common migrant and uncommon summer resident of California.	**Unlikely.** Project Area is considered outside current range.	No further actions are recommended for this species.
Olive-sided Flycatcher *Contopus cooperi*	BCC	Most often found in montane conifer forests where tall trees overlook canyons, meadows, lakes or other open terrain	**Not Present.** Suitable montane forest not present in the Project Area.	No further actions are recommended for this species.
Little Willow Flycatcher *Empidonax traillii brewsteri*	SE	Most numerous where extensive thickets of low, dense willows edge on wet meadows, ponds, or backwaters. Winter migrant.	**Not Present.** Thickets of willow or other suitable habitat not present in the Project Area.	No further actions are recommended for this species.
Bank Swallow *Riparia riparia*	ST	Migrant in riparian and other lowland habitats in western California. Nests in riparian areas with vertical cliffs and bands with fine-textured or sandy soils in which to nest.	**Not Present.** Suitable riparian and cliff habitat not present in the Project Area.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Oak Titmouse *Baeolophus inornatus*	SLC	Common resident of oak woodland habitats. Nests in woodpecker holes, natural cavities, or nest boxes. Often breeds near water.	**Not Present.** Oak woodland habitat not present in the Project Area.	No further actions are recommended for this species.
Loggerhead Shrike *Lanius ludovicianus*	CSC	Prefers open habitats with scattered shrubs, trees, pots, utility lines from which to forage for large insects. Nest well concealed above ground in densely-foliaged shrub or tree.	**Moderate Potential.** Open grassland habitat with adjacent shrubs and low trees may provide suitable nesting and foraging habitat for this species.	Breeding bird surveys should be conducted for any activities occurring between January 1st and August 31st.
Saltmarsh Common Yellowthroat *Geothlypis trichas sinuosa*	CSC	Frequents low, dense vegetation near water including fresh to saline emergent wetlands. Brushy habitats used in migration. Forages among wetland herbs and shrubs for insects primarily.	**Unlikely.** The small area off wetland vegetation within the Project Area provides inadequate nesting habitat.	No further actions are recommended for this species.
Yellow Warbler *Dendroica petechia*	CSC	Yellow warblers prefer dense riparian vegetation for breeding. Yellow warbler populations have declined due to brood parasitism by brown-headed cowbirds (Molothrus ater) and habitat destruction. Diet is primarily insects supplemented with berries.	**Not Present.** Suitable riparian habitat is not present in the Project Area.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Yellow-breasted Chat *Icteria virens*	CSC	Nests in low, dense riparian thickets consisting of willow, blackberry, and wild grape.	**Not Present.** Suitable riparian thickets are not present in the Project Area.	No further actions are recommended for this species.
Grasshopper Sparrow *Ammodramus savannarum*	Draft CSC	Frequents dense tall, dry or well-drained grasslands, especially native grasslands with mixed grasses and forbs for foraging and nesting. Nests on ground at base of overhanging clumps of vegetation.	**Unlikely.** Grassland habitat in the Project is disked regularly, likley during the breeding season. Dense grassland habitat is small and regularly disturbed.	No further actions are recommended for this species.
Bell's Sage Sparrow *Amphispiza belli*	CSC	Prefers dense chaparral and scrub habitats in breeding season. Found in more open habitats in winter.	**Unlikely.** Scrub and chaparral habitat are not present in the Project Area. This species may forage over the Project Area in winter.	No further actions are recommended for this species.
Suisun Song Sparrow *Melospiza melodia maxillaris*	BCC, CSC	Resident of brackish-water marshes surrounding Suisun Bay. Inhabits cattails, tules and other sedges, and *Salicornia*; also known to frequent tangles bordering sloughs.	**Not Present.** This species is restricted to Suisun Marsh, which is not in the Project Area.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Alameda Song Sparrow *Melospiza melodia pusillula*	BCC, CSC	Resident of salt marshes bordering south arm of San Francisco Bay. Inhabits *Salicornia* marshes; nests low in *Grindelia* bushes (high enough to escape high tides) and in *Salicornia*.	**Not Present.** Project Area is outside species current range. Suitable salt marsh habitat is not present in the Project Area.	No further actions are recommended for this species.
San Pablo Song Sparrow *Melospiza melodia samuelis*	BCC, CSC	Resident of salt marshes along the north side of San Francisco and San Pablo Bays. Inhabits tidal sloughs in *Salicornia* marshes; nests in *Grindelia* bordering slough channels.	**Not Present.** Suitable salt marsh habitat not present in the Project Area.	No further actions are recommended for this species.
Tricolored Blackbird *Agelaius tricolor*	CSC	Usually nests over or near freshwater in dense cattails, tules, or thickets of willow, blackberry, wild rose or other tall herbs.	**Unlikely.** Dense emergent vegetation in the Project Area is unsuitable to support breeding.	No further actions are recommended for this species.
Lawrence's Goldfinch *Carduelis lawrencei*	BCC	Inhabits oak woodlands, chaparral, riparian woodlands, pinyon-juniper associations, and weedy areas near water during the breeding season.	**Not Present.** Project Area is outside species' range, and suitable woodland or chaparral habitat is not present in the Project Area.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Reptiles and Amphibians				
western pond turtle *Clemmys marmorata*	CSC	Occurs in perennial ponds, lakes, rivers and streams with suitable basking habitat (mud banks, mats of floating vegetation, partially submerged logs) and submerged shelter.	**Not Present.** Suitable freshwater habitat is not present in the Project Area.	No further actions are recommended for this species.
California horned lizard *Phrynosoma coronatum frontale*	CSC	Occurs in valley-foothill hardwood, conifer and riparian habitats, as well as in pine-cypress juniper and annual grass habitats. Prefers sand areas, washes, flood plains and wind-blown deposits.	**Not Present.** Project Area is outside species' range and suitable habitat is not present in the Project Area.	No further actions are recommended for this species.
silvery legless lizard *Anniella pulchra pulchra*	CSC	Found in sandy or loose loamy soils under sparse vegetation. Soil moisture is essential.	**Not Present.** Project Area is outside species' range and suitable habitat is not present in the Project Area due to regular disking.	No further actions are recommended for this species.
giant garter snake Thamnophis gigas	FT, ST	Prefers freshwater marsh and low gradient streams. Has adapted to drainage channels and irrigation ditches.	**Not Present.** Suitable freshwater habitat is not present in the Project Area.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
California tiger salamander *Ambystoma californiense*	FT, CSC	Inhabits annual grass habitat and mammal burrows. Seasonal ponds and vernal pools crucial to breeding	**Not Present.** Grassland habitat is disked regularly, no small mammal burrows were observed during the site visit, and the Project Area is outside the species' current range.	No further actions are recommended for this species.
western spadefoot toad *Scaphiopus (Spea) hammondii*	CSC	Occurs primarily in grasslands but occasionally populates valley-foothill hardwood woodlands. Feed on insects, worms, and other invertebrates.	**Not Present.** Grassland habitat is disked regularly, and the Project Area is outside the species' current range.	No further actions are recommended for this species.
California red-legged frog *Rana aurora draytonii*	FT, CSC	Associated with quiet perennial to intermittent ponds, stream pools and wetlands. Prefers shorelines with extensive vegetation. Documented to disperse through upland habitats after rains.	**Not Present.** One documented occurrence within four miles of the Project Area. Significant barriers to dispersal exist between the site and the nearest documented occurrence. Suitable aquatic habitat is not present in the Project Area.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
foothill yellow-legged frog *Rana boylii*	CSC	Found in or near rocky streams in a variety of habitats. Feed on both aquatic and terrestrial invertebrates.	**Not Present.** No suitable stream habitat is present in the Project Area.	No further actions are recommended for this species.
Fishes				
river lamprey *Lampetra ayresi*	CSC	Anadromous fish found in the Sacramento-San Joaquin River delta.	**Not Present.** Project Area is outside the Sacramento-San Joaquin River delta.	No further actions are recommended for this species.
green sturgeon *Acipenser medirostris*	CSC, FT	Anadromous fish that spawns in Sacramento river. Feeds in estuaries and bays, including San Francisco Bay.	**High Potential.** Green sturgeon are considered probable by CDFG to occur in the waters adjacent to the Project Area.	If activities are to occur below the high tide line, then an essential fish habitat survey is recommended. A SWPP should be implemented to protect water quality.
coho salmon-central CA coast *Oncorhynchus kisutch*	FE, SE, NMFS	Spawn in coastal streams at temps. from 4-14C. Prefer beds of loose, silt-free, coarse gravel and cover nearby for adults.	**Not Present.** No coastal streams are present in the Project Area.	No further actions are recommended for this species.
Central California Coastal steelhead *Oncorhynchus mykiss*	FT, CSC, NMFS	Adults migrate upstream to spawn in cool, clear, well-oxygenated streams. Juveniles remain in fresh water for 1 or more years before migrating downstream to the ocean	**High Potential**. The waters adjacent to the Project Area are steelhead critical habitat.	If activities are to occur below the high tide line, then an essential fish habitat survey is recommended. A SWPP should be implemented to protect water quality.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Central Valley spring-run chinook salmon *Oncorhynchus tshawytscha*	FT, ST	Adults migrate upstream to spawn in cool, clear, well-oxygenated streams. Juveniles remain in fresh water for 1 or more years before migrating downstream to the ocean	**High Potential.** Chinook salmon are considered probable by CDFG to occur in waters adjacent to the Project Area.	If activities are to occur below the high tide line, then an essential fish habitat survey is recommended. A SWPP should be implemented to protect water quality.
Central Valley fall/late fall-run *Oncorhynchus tshawytscha*	CSC, NMFS	Adults migrate upstream to spawn in cool, clear, well-oxygenated streams. Juveniles remain in fresh water for 1 or more years before migrating downstream to the ocean	**High Potential.** Chinook salmon are considered probable by CDFG to occur in waters adjacent to the Project Area	If activities are to occur below the high tide line, then an essential fish habitat survey is recommended. A SWPP should be implemented to protect water quality.
delta smelt *Hypomesus transpacificus*	FT, ST	Live in the Sacramento-San Joaquin estuary in areas where salt and freshwater systems meet.	**High Potential.** Delta smelt have been documented on the western side of Mare Island.	If activities are to occur below the high tide line, then an essential fish habitat survey is recommended. A SWPP should be implemented to protect water quality.
longfin smelt *Spirinchus thaleichthys*	CSC	Pelagic species that mature in freshwater areas of the Sacramento-San Joaquin estuary and river system.	**Not Present.** Project Area is outside the Sacramento-San Joaquin River delta freshwater.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Sacramento splittail *Pogonichthys macrolepidotus*	CSC	Splittail are primarily freshwater fish, but are tolerant of moderate salinity (saltiness) and can live in water with salinities of 10-18 parts per thousand. Found in Sacramento Delta.	**High Potential.** Sacramento splittail are documented in Mare Island Strait.	If activities are to occur below the high tide line, then an essential fish habitat survey is recommended. A SWPP should be implemented to protect water quality.
Sacramento perch *Archoplites interruptus*	CSC, RP	Historically found in the sloughs, slow-moving rivers, and lakes of the Central Valley. Prefer warm water. Aquatic vegetation is essential for young. Tolerate wide range of physio-chemical water conditions.	**Not Present.** Suitable aquatic habitat is not present in the Project Area.	No further actions are recommended for this species.
Invertebrates				
Conservancy fairy shrimp *Branchinecta conservatio*	FE	Inhabit highly turbid water in vernal pools. Known from six populations in the northern central valley.	**Not Present.** Suitable vernal pool habitat is not present in the Project Area.	No further actions are recommended for this species.
vernal pool fairy shrimp *Branchinecta lynchi*	FT	Inhabit small, clear-water sandstone-depression pools, grassy swales, slumps, or basalt-flow depression pools.	**Not Present.** Suitable vernal pool habitat is not present in the Project Area.	No further actions are recommended for this species.
vernal pool tadpole shrimp *Lepidurus packardi*	FE	Pools commonly found in grass bottomed swales of unplowed grasslands. Some pools are mud-bottomed and highly turbid.	**Not Present.** Suitable vernal pool habitat is not present in the Project Area.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Callippe silverspot butterfly *Speyeria callippe callippe*	FE	Restricted to northern coastal scrub of the San Francisco peninsula. Hostplant is *Viola pedunculata.*	**Not Present.** *Viola pedunculata* was not detected during a reconnaissance-level plant survey in March 2007.	No further actions are recommended for this species.
monarch butterfly *Danaus plexippus*	none	Winter roost sites located in wind-protected tree groves with nectar and water sources nearby.	**Not Present.** A historical monarch wintering site is documented within the Project Area (CNDDB 2007). The eucalyptus trees used for wintering are present, and could still provide suitable wintering habitat. However, a protocol level monarch winter roost survey found no butterflies. Therefore the species is determined to be not present in the Project Area.	Protocol level surveys were completed for winter roosts. No monarchs were observed. It was determined that this site does not provide a winter roost site for monarch butterflies. See Section 5.3 for more details.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Plants				
bent-flowered fiddleneck *Amsinckia lunaris*	List 1B	Coastal bluff scrub, cismontane woodland, valley and foothill grassland. 3-500 m. Blooms March-June.	**Unlikely**. Suitable habitat in Project Area is very limited and/or disturbed (mowed/disced). Species not observed during March or June site visits.	No further surveys are recommended for this species.
pallid manzanita *Arctostaphylos pallida*	FT, SE, List 1B	Broad-leaved upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, coastal scrub. 185-465 m. Blooms December-March.	**Not present**. No manzanita observed in Project Area. Project Area not within elevation range of species.	No further surveys are recommended for this species.
Suisun Marsh aster *Aster lentus*	List 1B	Brackish and freshwater marshes and swamps. 0-3 m. Blooms May-November.	**Not present**. Species not observed in wetland habitat in Project Area during June survey.	No further surveys are recommended for this species.
alkali milk-vetch *Astragalus tener var. tener*	List 1B	Alkaline sites in playas, valley and foothill grassland (adobe clay), vernal pools. 1-60 m. Blooms March-June.	**Not present**. Suitable habitat and substrate for this species are not present in the Project Area.	No further surveys are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
San Joaquin spearscale *Atriplex joaquiniana*	List 1B	Seasonal alkali wetlands; alkaline sites in wet meadows, chenopod scrub, valley and foothill grasslands. 1-320 m. Blooms April -October.	**Not present**. Suitable habitat for this species limited to nonexistent in Project Area. Species not observed during June survey.	No further surveys are recommended for this species.
vernal pool smallscale *Atriplex persistens*	List 1B	Alkaline vernal pools. 10-115 m. Blooms June-October.	**Not present**. Suitable habitat for this species is not present in Project Area.	No further surveys are recommended for this species.
big scale balsamroot *Balsamorhiza macrolepis* var. *macrolepis*	List 1B	Valley and foothill grasslands, cismontane woodland, sometimes on serpentine soils. 90-1400 m. Blooms March-June.	**Not present**. Project Area not within elevation range of species.	No further surveys are recommended for this species.
big tarplant *Blepharizonia plumosa ssp. plumosa*	List 1B	Valley and foothill grassland. 30-505 m. Blooms July-October.	**Unlikely**. Suitable habitat in Project Area is very limited and/or disturbed (mowed/disced).	No further surveys are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Mt. Diablo fairy-lantern *Calochortus pulchellus*	List 1B	Chaparral, cismontane woodland, riparian woodland, valley and foothill grassland. 30-840 m. Blooms April-June.	**Unlikely**. Suitable habitat in Project Area is very limited and/or disturbed (mowed/disced). Species not observed during June site visit.	No further surveys are recommended for this species.
Butte County morning glory *Calystegia purpurata ssp. saxicola*	List 1B	Coastal dunes, coastal scrub, North Coast coniferous forest. 10-105 m. Blooms May-September.	**Not present**. Suitable habitat for this species is not present in Project Area.	No further surveys are recommended for this species.
Tiburon Indian paintbrush *Castilleja affinis* ssp. *neglecta*	FE, ST, List 1B	Rocky serpentine sites in valley and foothill grassland. 60-400 m. Blooms April-June.	**Not present**. Project Area not within elevation range of species.	No further surveys are recommended for this species.
holly-leaved ceanothus *Ceanothus purpureus*	List 1B	Chaparral and cismontane woodland; volcanic, rocky. 120-640 m. Blooms February-June.	**Not present**. Project Area not within elevation range of species.	No further surveys are recommended for this species.
Congdon's tarplant *Centromadia parryi ssp. congdonii*	List 1B	Alkaline soils in valley and foothill grassland. 1-230 m. Blooms June-November.	**Unlikely**. Suitable habitat in Project Area is very limited and species not observed during June site visit.	No further surveys are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
pappose tarplant *Centromadia parryi ssp. parryi*	List 1B	Coastal prairie, meadows and seeps, coastal salt marsh, valley and foothill grassland. Vernally mesic, often alkaline sites. 2-420 m. Blooms May-November.	**Unlikely**. Suitable habitat in Project Area is very limited and/or disturbed (mowed/disced). Species not observed during June site visit.	No further surveys are recommended for this species.
Franciscan thistle *Cirsium andrewsii*	List 1B	Broadleafed upland forest, coastal bluff scrub, coastal prairie, coastal scrub; mesic, sometimes serpentinite. 0-135 m. Blooms March-July.	**Not present**. Suitable habitat for this species is not present in Project Area.	No further surveys are recommended for this species.
Suisun thistle *Cirsium hydrophilum* var. *hydrophilum*	FE, List 1B	Salt marsh. 0-1 m. Known only from two occurrences in Solano County. Blooms July-September.	**Not present**. No thistles observed in salt marsh habitat in Project Area during June survey.	No further surveys are recommended for this species.
Point Reyes bird's-beak *Cordylanthus maritimus ssp. palustris*	List 1B	Coastal salt marshes and swamps. 0-10 m. Blooms June-October.	**Not present**. No bird's-beak observed in salt marsh habitat in Project Area during June survey.	No further surveys are recommended for this species.
soft bird's-beak *Cordylanthus mollis ssp. mollis*	FE, SR, List 1B	Coastal salt marshes and swamps. 0-3 m. Blooms July-November.	**Not present**. No bird's-beak observed in salt marsh habitat in Project Area during June survey.	No further surveys are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
western leatherwood *Dirca occidentalis*	List 1B	Broadleafed upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, North Coast coniferous forest, riparian forest, riparian woodland; mesic sites. 50-395 m. Blooms January-April.	**Not present**. Project Area not within elevation range of species.	No further surveys are recommended for this species.
dwarf downingia *Downingia pusilla*	List 2	Mesic sites in valley and foothill grassland, vernal pools. 1-485 m. Blooms March-May.	**Not present**. Suitable habitat for this species is not present in Project Area.	No further surveys are recommended for this species.
streamside daisy *Erigeron biolettii*	List 3	Broadleafed upland forest, cismontane woodland, North Coast coniferous forest; on rocky, mesic sites. 30-1100 m. Blooms June- September.	**Not present**. Suitable habitat for this species is not present in Project Area.	No further surveys are recommended for this species.
Tiburon buckwheat *Eriognum luteolum* var. *caninum*	List 3	Chaparral, coastal prairie, valley and foothill grassland; serpentine soils. 10- 500. Blooms June-September.	**Not present**. Suitable habitat and substrate for this species are not present in Project Area.	No further surveys are recommended for this species.
Mt. Diablo buckwheat *Eriogonum truncatum*	List 1A	Chaparral, coastal scrub, and valley and foothill grassland on dry, exposed clay or sandy substrates. 105-600 m. Blooms April-November.	**Not present**. Project Area not within elevation range of species.	No further surveys are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
fragrant fritillary *Fritillaria liliacea*	List 1B	Cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland; often serpentine. 3-410 m. Blooms February-April.	**Unlikely**. Suitable habitat in Project Area is very limited and/or disturbed (mowed/disced).	No further surveys are recommended for this species.
Diablo helianthella *Helianthella castanea*	List 1B	Broadleafed upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grassland. 60-1300 m. Blooms March-June.	**Not present**. Project Area not within elevation range of species.	No further surveys are recommended for this species.
Loma Prieta hoita *Hoita strobilina*	List 1B	Chaparral, cismontane woodland, valley and riparian woodland; serpentinite soils. 30-860 m. Blooms May-July (August-October).	**Not present**. Suitable habitat and substrate for this species are not present in Project Area.	No further surveys are recommended for this species.
Santa Cruz tarplant *Holocarpha macradenia*	FT, SE, List 1B	Coastal prairie, valley and foothill grassland. 10-220 m. Blooms June -October.	**Unlikely**. Suitable habitat in Project Area is very limited and/or disturbed (mowed/disced). Species not observed during June site visit.	No further surveys are recommended for this species.
Contra Costa goldfields *Lasthenia conjugens*	FE, List 1B	Mesic sites in cismontane woodland, playas (alkaline), valley and foothill grassland, vernal pools. 0-470 m. Blooms March-June.	**Not present**. Suitable habitat and substrate for this species are not present in Project Area.	No further surveys are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Delta tule pea *Lathyrus jepsonii var. jepsonii*	List 1B	Freshwater and brackish marshes and swamps. 0-4 m. Blooms May-September.	**Not present**. Species not observed in wetland habitat in Project Area during June survey.	No further surveys are recommended for this species.
legenere *Legenere limosa*	List 1B	Vernal pools. 1-880 m. Blooms April-June.	**Not present**. Suitable habitat for this species is not present in Project Area.	No further surveys are recommended for this species.
wolly-headed lessingia *Lessingia hololeuca*	List 3	Broadleafed upland forest, coastal scrub, lower montane coniferous forest, valley and foothill grassland on clay and serpentine. 15-305 m. Blooms June-October.	**Unlikely**. Suitable habitat in Project Area is very limited and/or disturbed (mowed/disced). Species not observed during June site visit.	No further surveys are recommended for this species.
Mason's lilaeopsis *Lilaeopsis masonii*	SR, List 1B	Brackish or freshwater marshes and swamps, riparian scrub. 0-10 m. Blooms April-November.	**Not present**. Species not observed in wetland habitat in Project Area during June survey.	No further surveys are recommended for this species.
Oregon meconella *Meconella oregana*	List 1B	Coastal prairie, coastal scrub. 250-620 m. Blooms March-April.	**Not present**. Project Area not within elevation range of species.	No further surveys are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Mt. Diablo cottonweed *Micropus amphibolus*	List 3	Broadleafed upland forest, chaparral, cismontane woodland, valley and foothill grassland; rocky soils. 45-825 m. Blooms March- May.	**Unlikely**. Suitable habitat in Project Area is very limited and/or disturbed (mowed/disced).	No further surveys are recommended for this species.
San Antonio Hills monardella *Monardella antonia* ssp. *antonia*	List 3	Chaparral, cismontane woodland. 500-1000 m. Blooms June - August.	**Not present**. Project Area not within elevation range of species.	No further surveys are recommended for this species.
robust monardella *Monardella villosa ssp. globosa*	List 1B	Chaparral (openings), cismontane woodland, coastal scrub. 185-600 m. Blooms June-August.	**Not present**. Project Area not within elevation range of species.	No further surveys are recommended for this species.
Marin knotweed *Polygonum marinense*	List 3	Coastal salt or brackish marshes and swamps. 0-10 m. Blooms in May-August (April-October).	**Not present**. Species not observed in salt marsh habitat in Project Area during June survey.	No further surveys are recommended for this species.
rayless ragwort *Senecio aphanactis*	List 2	Chaparral, cismontane woodland, coastal scrub, alkaline soils. 15-800 m. Blooms January-April.	**Not present**. Suitable habitat and substrate for this species are not present in Project Area.	No further surveys are recommended for this species.
most beautiful jewel-flower *Streptanthus albidus ssp. peramoenus*	List 1B	Chaparral, cismontane woodland, valley and foothill grassland; serpentinite.. 120-1000 m. Blooms April-June.	**Not present**. Project Area not within elevation range of species.	No further surveys are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
California seablite *Suaeda californica*	FE, List 1B	Coastal salt marshes and swamps. 0-15 m. Blooms July-October.	**Not present**. No *Suaeda* observed in salt marsh habitat in Project Area during June survey.	No further surveys are recommended for this species.
showy Indian clover *Trifolium amoenum*	FE, List 1B	Valley and foothill grassland, coastal bluff scrub. Sometimes on serpentine soil, open sunny sites, swales, roadsides, eroding cliff faces. 5-560 m. Blooms April-June.	**Unlikely**. Suitable habitat in Project Area is very limited and/or disturbed (mowed/disced). Species not observed during June site visit.	No further surveys are recommended for this species.
saline clover *Trifolium depauperatum* var. *hydrophilum*	List 1B	Marshes and swamps, valley and foothill grassland, vernal pools; mesic, alkaline soils. 0-300 m. Blooms April - June.	**Not present**. Suitable habitat and substrate for this species are not present in Project Area.	No further surveys are recommended for this species.
oval-leaved viburnum *Viburnum ellipticum*	List 2	Chaparral, cismontane woodland, lower montane coniferous forest. 215-1400 m. Blooms May-June.	**Not present**. Project Area not within elevation range of species.	No further surveys are recommended for this species.

*** Key to status codes:**

FE	Federal Endangered
FT	Federal Threatened
FC	Federal Candidate
FD	Federal De-listed
NMFS	Species under the Jurisdiction of the National Marine Fisheries Service
BCC	USFWS Birds of Conservation Concern
RP	Sensitive species included in a USFWS Recovery Plan or Draft Recovery Plan
SE	State Endangered
ST	State Threatened
SR	State Rare
CSC	CDFG Species of Special Concern
Draft CSC	4 April 2000 Draft CDFG Species of Special Concern
BLM: sensitive	Bureau of Land Management Sensitive Species
CDF: sensitive	California Department of Forestry and Fire Prevention Sensitive Species
CFP	CDFG Fully Protected Animal
WBWG	Western Bat Working Group High Priority species
SLC	Species of Local Concern
List 1A	CNPS List 1A: Plants presumed extinct in California
List 1B	CNPS List 1B: Plants rare, threatened or endangered in California and elsewhere
List 2	CNPS List 2: Plants rare, threatened, or endangered in California, but more common elsewhere
List 3	CNPS List 3: Plants about which CNPS needs more information (a review list)

APPENDIX C

REPRESENTATIVE PROJECT AREA PHOTOGRAPHS

Top: Buildings and dense shrub habitat.

Bottom: Eucalyptus trees and disced understory.

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Top: Disced west-facing hillside with margins of undisced habitat.

Bottom: Small wetland in southern corner of the Project Area.

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Top: Small coastal saltmarsh habitat found in the southern portion of the Project Area.

Bottom: Sandy shoreline habitat found in the southern portion of the Project Area.

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APPENDIX D

PRELIMINARY SECTION 404 AND SECTION 10 DETERMINATION

Preliminary Section 404 and Section 10 Determination

GENERAL MILLS PROJECT

VALLEJO, SOLANO COUNTY, CALIFORNIA

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF APPENDICES

1.0 INTRODUCTION

1.1 Study Background

The General Mills site (Study Area) is a 38-acre property in Solano County, California on the east side of Mare Island Strait (Figure 1). The site consists of an inoperative industrial complex and surrounding hillsides.

On June 25 , 2007, WRA conducted a routine wetland delineation in the Study Area to determine the presence of potential wetlands and waters subject to federal jurisdiction under Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act. This report presents the results of this delineation, and Appendix A depicts the extent of Corps jurisdiction within the Study Area.

1.2 Regulatory Background

Section 404 of the Clean Water Act

Section 404 of the Clean Water Act gives the U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (Corps) regulatory and permitting authority regarding discharge of dredged or fill material into "navigable waters of the United States". Section 502(7) of the Clean Water Act defines navigable waters as "waters of the United States, including territorial seas." Section 328 of Chapter 33 in the Code of Federal Regulations defines the term "waters of the United States" as it applies to the jurisdictional limits of the authority of the Corps under the Clean Water Act. A summary of this definition of "waters of the U.S." in 33 CFG 328.3 includes (1) waters used for commerce; (2) interstate waters and wetlands; (3) "other waters" such as intrastate lakes, rivers, streams, and wetlands; (4) impoundments of waters; (5) tributaries to the above waters; (6) territorial seas; and (7) wetlands adjacent to waters. Therefore, for purposes of the determining Corps jurisdiction under the Clean Water Act, "navigable waters" as defined in the Clean Water Act are the same as "waters of the U.S." defined in the Code of Federal Regulations above.

The limits of Corps jurisdiction under Section 404 as given in 33 CFR Section 328.4 are as follows: (a) *Territorial seas:* three nautical miles in a seaward direction from the baseline; (b) *Tidal waters of the U.S.:* high tide line or to the limit of adjacent non-tidal waters; (c) *Non-tidal waters of the U.S.:* ordinary high water mark or to the limit of adjacent wetlands; (d) *Wetlands:* to the limit of the wetland.

Section 10 of the Rivers and Harbors Act

Section 10 of the Rivers and Harbors Act (1899) applies to tidal areas below mean high water (MHW) and includes tidal areas currently subject to tidal influence, as well as historic tidal areas currently behind levees that historically were below MHW.

Figure 1. Study Area Location Map

N

0 1,000 2,000 4,000 Feet

General Mills
Vallejo, CA

wra
ENVIRONMENTAL CONSULTANTS

Date: August 2007
Basemap: USGS Topo Quad
Map By: Derek Chan
Filepath: L:\Acad 2000Files\17000\17038\gis\arcmap\Wetland\Fig1_LocMap_20070817.mxd

2.0 METHODS

Prior to conducting field surveys, reference materials were reviewed, including the Soil Survey of Solano County (USDA 1977), the Benicia USGS 7.5' quadrangle, and aerial photos of the site.

A focused evaluation of indicators of wetlands and waters was performed in the Study Area on June 25, 2007. The methods used in this study to delineate jurisdictional wetlands and waters are based on the *U.S. Army Corps of Engineers Wetlands Delineation Manual* ("Corps Manual"; Environmental Laboratory 1987) and the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* ("Arid West Supplement"; Corps 2006). The routine method for wetland delineation described in the Corps Manual was used to identify areas potentially subject to Corps Section 404 jurisdiction within the Study Area. A general description of the Study Area, including plant communities present, topology, and land use was also generated during the delineation visits. The methods for evaluating the presence of wetlands and Other Waters of the U.S. employed during the site visit are described in detail below.

2.1 Potential Section 404 Waters of the U.S.

2.1.1 Wetlands

The Study Area was evaluated for the presence or absence of indicators of the three wetland parameters described in the Corps Manual (Environmental Laboratory 1987) and Arid West Supplement (Corps 2006).

Section 328.3 of the Federal Code of Regulations defines wetlands as:

> *"Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."*
>
> EPA, 40 CFR 230.3 and CE, 33 CFR 328.3 (b)

The three parameters used to delineate wetlands are the presence of: (1) hydrophytic vegetation, (2) wetland hydrology, and (3) hydric soils. According to the Corps Manual, for areas not considered "problem areas" or "atypical situations":

> *"....[E]vidence of a minimum of one positive wetland indicator from each parameter (hydrology, soil, and vegetation) must be found in order to make a positive wetland delineation."*

Data on vegetation, hydrology, and soils collected at sample points during the delineation site visit was reported on Arid West Supplement data forms. Once an area was determined to be a potential jurisdictional wetland, its boundaries were delineated using GPS equipment and mapped on a topographic map. The areas of potential jurisdictional wetlands were measured digitally using ArcGIS software. Indicators described in the Arid West Supplement were used to make wetland determinations at each sample point in the Study Area and are summarized below.

Vegetation

Plant species identified on the Study Area were assigned a wetland status according to the U.S. Fish and Wildlife Service list of plant species that occur in wetlands (Reed 1988). This wetland classification system is based on the expected frequency of occurrence in wetlands as follows:

OBL	Always found in wetlands	>99% frequency
FACW(±)	Usually found in wetlands	67-99%
FAC	Equal in wetland or non-wetlands	34-66%
FACU	Usually found in non-wetlands	1-33%
UPL/NL	Upland/Not listed (upland)	<1%

The Arid West Supplement requires that a three-step process be conducted to determine if hydrophytic vegetation is present. The procedure first requires the delineator to apply the "50/20 rule" (Indicator 1) described in the manual. To apply the "50/20 rule", dominant species are chosen independently from each stratum of the community. In general, dominant species are determined for each vegetation stratum from a sampling plot of an appropriate size surrounding the sample point. In general, dominants are the most abundant species that individually or collectively account for more than 50 percent of the total vegetative cover in the stratum, plus any other species that, by itself, accounts for at least 20 percent of the total cover. If greater than 50 percent of the dominant species has an OBL, FACW, or FAC status, ignoring + and - qualifiers, the sample point meets the hydrophytic vegetation criterion.

If the sample point fails Indicator 1 and both hydric soils and wetland hydrology are not present, then the sample point does not meet the hydrophytic vegetation criterion, unless the site is a problematic wetland situation. However, if the sample point fails Indicator 1 but hydric soils and wetland hydrology are both present, the delineator must apply Indicator 2.

Indicator 2 is known as the Prevalence Index. The prevalence index is a weighted average of the wetland indicator status for all plant species within the sampling plot. Each indicator status is given a numeric code (OBL = 1, FACW = 2, FAC = 3, FACU = 4, and UPL = 5). Indicator 2 requires the delineator to estimate the percent cover of each species in every stratum of the community and sum the cover estimates for any species that is present in more than one stratum. The delineator must then organize all species into groups according to their wetland indicator status and calculate the Prevalence Index using the following formula, where A equals total percent cover:

$$PI = \frac{A_{OBL} + 2A_{FACW} + 3A_{FAC} + 4A_{FACU} + 5A_{UPL}}{A_{OBL} + A_{FACW} + A_{FAC} + A_{FACU} + A_{UPL}}$$

The Prevalence Index will yield a number between 1 and 5. If the Prevalence Index is equal to or less than 3, the sample point meets the hydrophytic vegetation criterion. However, if the community fails Indicator 2, the delineator must proceed to Indicator 3.

Indicator 3 is known as Morphological Adaptations. If more than 50 percent of the individuals of a FACU species have morphological adaptations for life in wetlands, that species is considered

to be a hydrophyte and its indicator status should be reassigned to FAC. If such observations are made, the delineator must recalculate Indicators 1 and 2 using a FAC indicator status for this species. The sample point meets the hydrophytic vegetation criterion if either test is satisfied.

Hydrology

The Corps jurisdictional wetland hydrology criterion is satisfied if an area is inundated or saturated for a period sufficient to create anoxic soil conditions during the growing season (a minimum of 14 consecutive days in the Arid West region). Evidence of wetland hydrology can include primary indicators, such as visible inundation or saturation, drift deposits, oxidized root channels, and salt crusts, or secondary indicators such as the FAC-neutral test, presence of a shallow aquitard, or crayfish burrows. The Arid West Supplement contains 16 primary hydrology indicators and 10 secondary hydrology indicators. Only one primary indicator is required to meet the wetland hydrology criterion; however, if secondary indicators are used, at least two secondary indicators must be present to conclude that an area has wetland hydrology.

The presence or absence of the primary or secondary indicators described in the Arid West Supplement was utilized to determine if sample points within the Study Area met the wetland hydrology criterion.

Soils

The Natural Resource Conservation Service (NRCS) defines a hydric soil as follows:

> *"A hydric soil is a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part."*
>
> Federal Register July 13, 1994,
> U.S. Department of Agriculture, NRCS

Soils formed over long periods of time under wetland (anaerobic) conditions often possess characteristics that indicate they meet the definition of hydric soils. Hydric soils can have a hydrogen sulfide (rotten egg) odor, low chroma matrix color, generally designated 0, 1, or 2, used to identify them as hydric, presence of redox concentrations, gleyed or depleted matrix, or high organic matter content.

Specific indicators that can be used to determine whether a soil is hydric for the purposes of wetland delineation are provided in the NRCS *Field Indicators of Hydric Soils in the U.S.* (USDA 2006). The Arid West Supplement provides a list of 23 of these hydric soil indicators which are known to occur in the Arid West region. Soil samples were collected and described according to the methodology provided in the Arid West Supplement. Soil chroma and values were determined by utilizing a standard Munsell soil color chart (GretagMacbeth 2000).

Hydric soils were determined to be present if any of the soil samples met one or more of the 23 hydric soil indicators described in the Arid West Supplement.

2.1.2 Other Waters of the U.S.

In addition, this study evaluated the presence of any "waters of the United States" other than wetlands potentially subject to Corps jurisdiction under Section 404 of the Clean Water Act. Other areas, besides wetlands, subject to Corps jurisdiction include lakes, rivers, and streams (including intermittent streams). Jurisdiction in non-tidal areas extends to the ordinary high water mark (OHW), which is defined as:

> *" . . that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impresses on the bank, shelving, changes in the characteristics of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas."*
>
> CE, 33 CFR 328.3 (e)

Identification of the ordinary high water mark followed the Corps Regulatory Guidance Letter No. 05-05, *Ordinary High Water Mark Identification* (Corps 2005).

Jurisdiction in tidal areas extends to the high tide line (HTL), which is defined as:

> *" . . the line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm."*
>
> CE, 33 CFR 328.3 (d)

HTL was calculated as +7.22 feet Mean Lower Low Water (MLLW) (+7.65 feet NAVD 88) from National Oceanic and Atmospheric Administration (NOAA) tidal datums (Appendix D).

2.2 Areas Exempt from Section 404 Jurisdiction

Some areas that meet the technical criteria for wetlands or waters may not be jurisdictional under the Clean Water Act. Included in this category are some man-induced wetlands, which are areas that have developed at least some characteristics of naturally occurring wetlands due to either intentional or incidental human activities. Examples of man-induced wetlands may include, but are not limited to, irrigated wetlands, impoundments, or drainage ditches excavated in uplands, wetlands resulting from filling of formerly deep water habitats, dredged material disposal areas, and depressions within construction areas.

In addition, some isolated wetlands and waters may also be considered outside of Corps jurisdiction as a result of the Supreme Court's decision in *Solid Waste Agency of Northern Cook County (SWANCC) v. United States Army Corps of Engineers* (531 U.S. 159 (2001)). Isolated wetlands and waters are those areas that do not have a surface or groundwater connection to, and are not adjacent to a navigable "Waters of the U.S.", and do not otherwise exhibit an interstate commerce connection.

As a result of the Supreme Court decision regarding the consolidated cases *Rapanos v. United States*, and *Carabell v. United States* (126 S. Ct. 2208 (2006)), the Corps may choose not to exert jurisdiction over non-navigable waters or wetlands that lack a "significant nexus" with a "traditional navigable Water of the U.S." (TNW), provided that the feature is not a "relatively permanent" (i.e. flowing year-round or having continuous flow at least seasonally) tributary of a TNW or a wetland directly abutting a relatively permanent tributary (Corps 2007). Determination of whether or not a significant nexus exists is up to the Corps and involves a fact-based analysis.

2.3 Potential Section 10 Waters

Section 10 of the Rivers and Harbors Act (1899) applies to tidal areas below mean high water (MHW) and includes tidal areas currently subject to tidal influence, as well as historic tidal areas currently behind levees that historically were below MHW. MHW was given as +5.30 feet MLLW (+5.73 feet NAVD 88) at the Mare Island Naval Shipyard, Carquinez Strait tidal datum station (NOAA 2005) (Appendix D).

3.0 STUDY AREA DESCRIPTION

The Study Area is a 38-acre inoperative industrial complex and adjacent hillside in Vallejo, Solano County, California (Figure 1). It is bordered to the east and north by residential and commercial development. To the south, there is a small area of open space, predominately non-native grassland. The Project Area is bordered on the west by Mare Island Strait. Elevations in the Project Area range from 0 to 140 feet (0 to 43 meters).

Vegetation

Much of the flat areas in the Study Area are taken up by the inoperative industrial complex, while ruderal, non-native grass and herbaceous species and stands of non-native trees occur on the hillsides. Dominant vegetation in grassland areas determined to be uplands includes wild oats (*Avena sp*, NL), common mustard *(Brassica nigra*, NL), Johnsongrass (*Sorghum halepense*, FACU), and fennel (*Foeniculum vulgare*, FACU). The primary tree species in the stands of non-native trees are eucalyptus (*Eucalyptus* spp., NL), acacia (*Acacia* spp., NL), and pine (*Pinus* spp., NL).

A small seasonal wetland dominated by cattail (*Typha angustifolia*, OBL) in the wetter areas, and species including Bermuda grass (*Cynodon dactylon*, FAC), bristly ox-tongue (*Picris echioides*, FAC) and willowherb (*Epilobium ciliatum*, FACW) in the drier areas, is present in the southern portion of the Study Area.

Northern coastal salt marsh is present in a small section of the Study Area shoreline. The dominant species in this community are salt grass (*Distichlis spicata*, FACW) and jaumea (*Jaumea carnosa*, OBL).

Hydrology

Natural hydrological sources for the Study Area include precipitation and surface run-off from adjacent lands. The seasonal wetland is located at the base of a hill, and there may be a hillside seep that contributes water to this wetland. The coastal salt marsh receives tidal inundation from Mare Island Strait.

Soils

The Solano County Soil Survey (USDA 1977) indicates that the Study Area has two native soil types: Dibble - Los Osos Clay Loam, 9 to 30 percent slopes, and Dibble - Los Osos Clay Loam, 30 to 50 percent slopes, eroded. Additionally, a portion of the Study Area is mapped as Made

Land. None of these soil types is listed on the National Hydric Soils List (USDA 2007). These soil types are described in detail below and are shown in Figure 2:

Dibble - Los Osos Clay Loam.

The Dibble - Los Osos soils are about 60 percent Dibble clay loam and about 30 percent Los Osos clay loam, with the remaining 10 percent consisting of small areas of other loam soils. Runoff is medium to rapid.

The Dibble series consists of well-drained soils that are underlain by sandstone at a depth of 20 to 40 inches. Permeability is slow. A representative profile consists of a brown (10 YR 4/3) clay loam surface layer 13 inches thick underlain by a dark yellowish brown (10 YR 3/4) heavy clay loam layer to a depth of 23 inches. Underneath this layer is 7 inch layer of olive brown (2.5 Y 4/4) light clay, which is underlain by weathered fine sandstone that becomes harder as depth increases.

The Los Osos series also consists of well-drained soils that are underlain by sandstone at a depth of 20 to 40 inches and have a slow permeability. A representative profile of these soils consists of a dark brown (10 YR 3/3) clay loam layer in the top 7 inches underlain by a brown (10 YR 4/3) heavy clay loam layer 3 inches thick. Underneath these layers is a 15 inch layer of dark yellowish brown (10 YR 3/4) light clay, which is underlain by weathered sandstone.

Made Land. This mapping unit consists of areas that have been filled in with mixed materials, such as sandstone, shale, concrete, and pieces of pavement.

4.0 RESULTS

Vegetation, soils and hydrology data collected during delineation site visits are reported on standard Corps Arid West Region data forms in Appendix A. Potential Section 404 jurisdictional areas are described in the following sections and depicted in Appendix A. Photos of representative portions of the Study Area and sample points are shown in Appendix B. A list of plant species observed during the site visits is included in Appendix C.

4.1 Potential Section 404 Waters of the U.S.

4.1.1 Wetlands

A small seasonal wetland (NWI classification = PEMC/F, palustrine emergent wetland, seasonally to semipermanently flooded) identified as a potentially jurisdictional wetland is present at the base of a hillside in the southern portion of the Study Area. The wetland is dominated by FAC to OBL wetland species including cattail, Bermuda grass, willowherb, and bristly ox-tongue. The wettest area of the wetland, which may be better described as emergent marsh, has hydric soils characterized by histosols and was inundated or saturated at the time of the field visit. The drier areas of the wetland had moist soils exhibiting redoximorphic features. The source of the wetland's water was presumed to be hillside runoff or a hillside seep.

The border between seasonal wetland and upland communities was determined primarily by vegetation: areas dominated by upland vegetation species were not included in the areas

identified as potentially jurisdictional wetlands. Soils in the areas identified as uplands lacked hydric soil indicators and were dry at the time of the field visit.

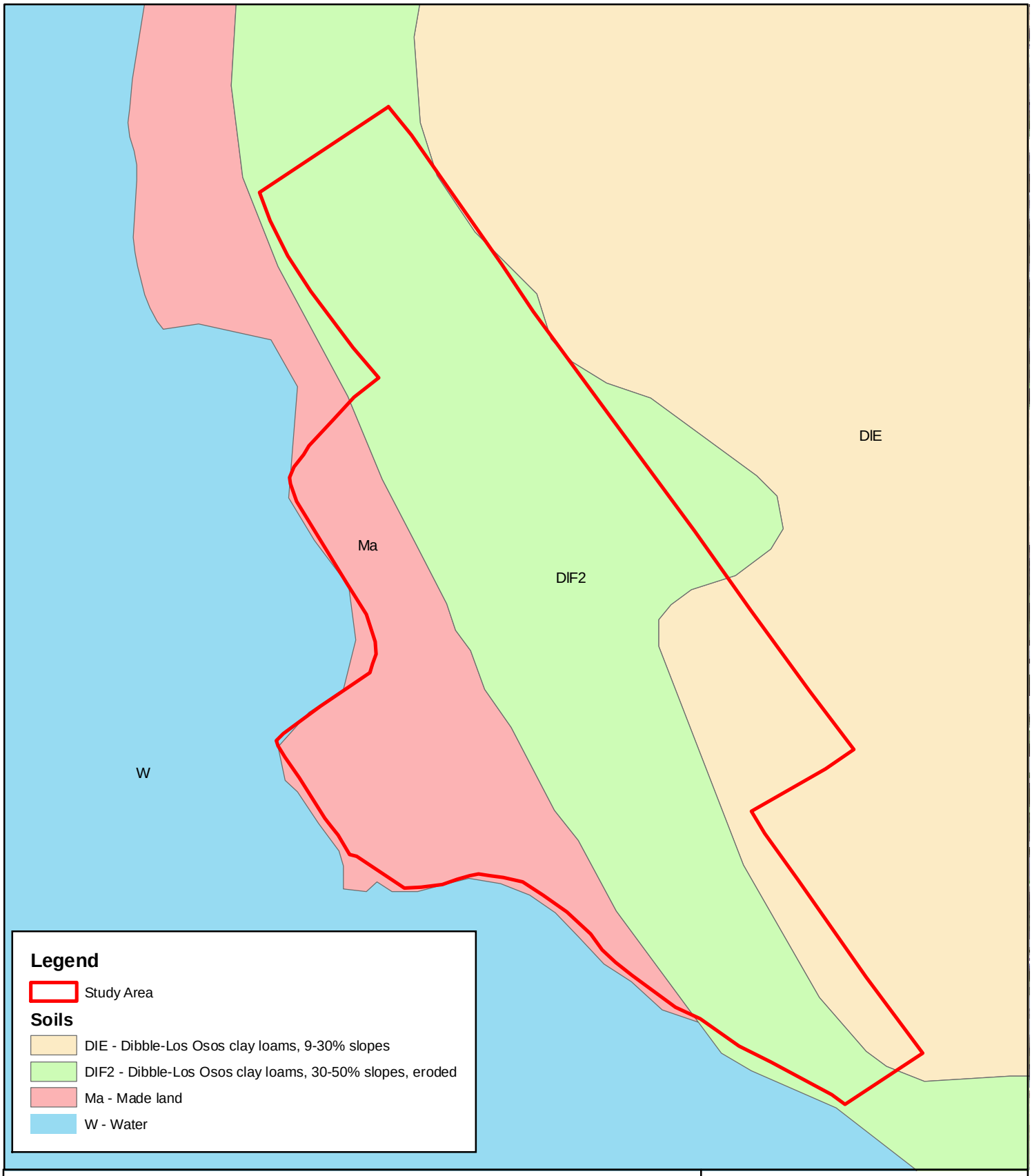

Figure 2. Study Area Soils Map

N

0 150 300 600 Feet

General Mills
Vallejo, California

wra
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Date: August 2007
Aerial: TerraServer, 2004
Map By: Derek Chan
Filepath: L:\Acad 2000Files\17000\17038\gis\arcmap\Wetland\Fig2_Soils_20070820.mxd

4.1.2 Other Waters of the U.S.

Because the vertical datum of the topographic basemap of the General Mills site is unknown, the location of the high tide line that delineates the limit of Section 404 jurisdiction, +7.65 feet NAVD 88, can only be approximated on the figure in Appendix A. However, it is assumed that the small area of coastal salt marsh would fall within the limits of Section 404 jurisdiction, since it is below the observed high tide line.

4.2 Areas Exempt from Section 404 Jurisdiction

The seasonal wetland mapped in this report does not appear to connect to any other wetland or waters. It is located in a slight depression at the base of a hillside approximately 50 feet from Mare Island Strait. In between the wetland and Mare Island Strait are ruderal grassland, a flat, dirt lot and a border of upland shrubs. It would be up to the Corps to determine whether or not the seasonal wetland would be considered adjacent to Mare Island Strait and thus subject to jurisdiction, or whether it would be considered isolated.

4.3 Potential Section 10 Waters

Because the vertical datum of the topographic basemap of the General Mills site is unknown, the location of the mean high water level that delineates the limit of Section10 jurisdiction, +5.73 feet NAVD 88, can only be approximated on the figure in Appendix A.

5.0 POTENTIAL CORPS OF ENGINEERS JURISDICTION

The General Mills Study Area contains a 0.016-acre seasonal wetland that may or may not be considered isolated by the Corps; therefore it may or may not meet the definition of jurisdictional wetlands and Other Waters for Section 404 of the Clean Water Act. This wetland area was dominated by hydrophytic vegetation with FAC, FACW, and OBL classified plants, and it contained wetland hydrology indicators and evidence of hydric soil. However, it does not appear to have any connections to any wetlands or Other Waters.

Section 404 Corps jurisdiction on the shoreline will extend to the high tide line, which was calculated to be +7.22 feet Mean Lower Low Water (MLLW) (+7.65 feet NAVD 88). Corps jurisdiction under Section 10 extends to mean high water, which was given as +5.30 feet MLLW (+5.73 feet NAVD 88) at the Mare Island Naval Shipyard, Carquinez Strait tidal datum station (NOAA 2005).

The conclusion of this delineation is based on conditions observed at the time of the field survey conducted on June 25, 2007.

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Appendix A - Preliminary Section 404 and Section 10 Jurisdictional Maps and Data Sheets

Legend

- Study Area
- Wetlands
- Approximate Limit of Section 404 Jurisdiction (7.65 ft NAVD 88)
- Approximate Limit of Section 10 Jurisdiction (5.73 ft NAVD 88)
- Contour (5 ft.)

Vertical datum of base map is unknown, so depiction of tidal datums on map is approximate.

Appendix A-1. Preliminary Section 404 and Section 10 Jurisdictional Map

General Mills
Vallejo, California

N

0 100 200 400 Feet

1 inch equals 200 feet

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Date: August 2007
Aerial: TerraServer, 2004
Map By: Derek Chan
Filepath: L:\Acad 2000Files\17000\17038\gis\arcmap\Wetland\AppendixA1_jursidictional_20070910.mxd

Appendix A-2. Preliminary Section 404 Jurisdictional Map

General Mills
Vallejo, California

N

0 100 200 Feet

1 inch equals 100 feet

wra
ENVIRONMENTAL CONSULTANTS

Date: August 2007
Aerial: TerraServer, 2004
Map By: Derek Chan
Filepath: L:\Acad 2000Files\17000\17038\gis\arcmap\Wetland\AppendixA2_jurisdictional_20070820.mxd

Wetland Determination Data Form - Arid West Region

Project/Site: General Mills | City: Vallejo | County: Solano | Sampling Date: 6/25/2007

Applicant/Owner: General Mills | State: CA | Sampling Point: P1

Investigator(s): WRA, Inc. | Section,Township,Range:

Landform (hillslope, terrace, etc.): base of slope | Local Relief (concave, convex, none): none | Slope(%): 0

Subregion(LRR): LRR C (Medit. CA) | Lat: 38.079 N | Long: 122.242 W | Datum: WGS 84

Soil Map Unit Name: Dibble-Los Osos clay loams, 30-50% slopes, eroded | NWI classification: upland

Are climatic/hydrologic conditions on-site typical for this time of year? ☐ Yes ☐ No (If no, explain in remarks)

Are any of the following significantly disturbed? ☐ Vegetation ☒ Soil ☐ Hydrology | Are "Normal Circumstances" present? ☒ Yes ☐ No

Are any of the following naturally problematic? ☐ Vegetation ☐ Soil ☐ Hydrology (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? ☐ Yes ☒ No

Hydric Soil Present? ☐ Yes ☒ No

Wetland Hydrology Present? ☐ Yes ☒ No

Is the Sampled Area within a Wetland? ☐ **Yes** ☒ **No**

Remarks: Soil appears to consist of fill material.

VEGETATION

Tree stratum (use scientific names)	Absolute % cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Tree Stratum Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
Sapling/Shrub Stratum Total Cover:			
Herb Stratum			
1. *Avena sp.*	70	yes	NL
2. *Lepidium latifolium*	10	no	FACW
3. *Foeniculum vulgare*	5	no	FACU
4. *Picris echioides*	5	no	FAC
5. *Brassica nigra*	5	no	NL
6.			
7.			
8.			
Herb Stratum Total Cover:	**95**		
Woody Vine Stratum			
1.			
2.			
Woody Vine Stratum Total Cover:			

% Bare ground in herb stratum: 5 | % cover of biotic crust:

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC? 0 (A)

Total number of dominant species across all strata? 1 (B)

% of dominant species that are OBL, FACW, or FAC? 0 (A/B)

Prevalence Index Worksheet

Total % cover of:	Multiply by:
OBL species	x1
FACW species	x2
FAC species	x3
FACU species	x4
UPL species	x5
Column Totals (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators

☐ Dominance Test is >50%

☐ Prevalence Index is </= 3.0[1]

☐ Morphological adaptations (provide supporting data in remarks)

☐ Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present ? ☐ Yes ☒ No

Remarks: Although some weedy wetland species are present, vegetation is dominated by upland species.

SOIL

Sampling Point P1

Profile description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[1]	Texture	Remarks
0-8	2.5 Y 4/2	70					clumpy, gravelly	appears to be fill material

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)(LRR C)
- ☐ 1cm Muck (A9)(LRR D)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1cm Muck (A9) (LRR C)
- ☐ 2cm Muck (A10)(LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (explain in remarks)

[3]Indicators of hydric vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present ? ☐ **Yes** ☒ **No**

Remarks: Soil is a mixed clumpy, gravelly loam that may be fill material. No redoximorphic features were observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)(Nonriverine)
- ☐ Sediment Deposits (B2)(Nonriverine)
- ☐ Drift Deposits (B3)(Nonriverine)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in PLowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1)(Riverine)
- ☐ Sediment Deposits (B2)(Riverine)
- ☐ Drift Deposits (B3)(Riverine)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface water present? ☐ Yes ☒ No Depth (inches): _____

Water table present? ☐ Yes ☒ No Depth (inches): _____

Saturation Present? (includes capillary fringe) ☐ Yes ☒ No Depth (inches): _____

Wetland Hydrology Present ? ☐ **Yes** ☒ **No**

Describe recorded data (stream guage, monitoring well, aerial photos, etc.) if available.

Remarks: No evidence of wetland hydrology observed.

Wetland Determination Data Form - Arid West Region

Project/Site: General Mills | City: Vallejo | County: Solano | Sampling Date: 6/25/2007

Applicant/Owner: General Mills | State: CA | Sampling Point: P2

Investigator(s): WRA, Inc. | Section,Township,Range:

Landform (hillslope, terrace, etc.): base of slope | Local Relief (concave, convex, none): none | Slope(%): 0

Subregion(LRR): LRR C (Medit. CA) | Lat: 38.079 N | Long: 122.242 W | Datum: WGS 84

Soil Map Unit Name: Dibble-Los Osos clay loams, 30-50% slopes, eroded | NWI classification: PEMC/F

Are climatic/hydrologic conditions on-site typical for this time of year? ☐ Yes ☐ No (If no, explain in remarks)

Are any of the following significantly disturbed? ☐ Vegetation ☐ Soil ☐ Hydrology | Are "Normal Circumstances" present? ☒ Yes ☐ No

Are any of the following naturally problematic? ☐ Vegetation ☐ Soil ☐ Hydrology (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? ☒ Yes ☐ No

Hydric Soil Present? ☒ Yes ☐ No

Wetland Hydrology Present? ☒ Yes ☐ No

Is the Sampled Area within a Wetland? ☒ **Yes** ☐ **No**

Remarks: The border between wetland and upland communities was determined primarily by vegetation: areas dominated by upland vegetation species were not included in the areas identified as potentially jurisdictional wetlands.

VEGETATION

Tree stratum (use scientific names)	Absolute % cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Tree Stratum Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
Sapling/Shrub Stratum Total Cover:			
Herb Stratum			
1. *Typha angustifolia*	30	yes	OBL
2. *Cynodon dactylon*	30	yes	FAC
3. *Epilobium ciliatum*	10	no	FACW
4. *Picris echioides*	10	no	FAC
5.			
6.			
7.			
8.			
Herb Stratum Total Cover:	80		
Woody Vine Stratum			
1.			
2.			
Woody Vine Stratum Total Cover:			

% Bare ground in herb stratum: 20 | % cover of biotic crust:

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC? 2 (A)

Total number of dominant species across all strata? 2 (B)

% of dominant species that are OBL, FACW, or FAC? 100 (A/B)

Prevalence Index Worksheet

Total % cover of:	Multiply by:
OBL species	x1
FACW species	x2
FAC species	x3
FACU species	x4
UPL species	x5
Column Totals (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators

☒ Dominance Test is >50%

☐ Prevalence Index is </= 3.0[1]

☐ Morphological adaptations (provide supporting data in remarks)

☐ Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present ? ☒ Yes ☐ No

Remarks: Hydrophytic vegetation present at sample point.

SOIL

Sampling Point P2

Profile description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[1]	Texture	Remarks
0-6	black							saturated histosol soil

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☒ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)(LRR C)
- ☐ 1cm Muck (A9)(LRR D)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1cm Muck (A9) (LRR C)
- ☐ 2cm Muck (A10)(LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (explain in remarks)

[3]Indicators of hydric vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present ? ☒ **Yes** ☐ **No**

Remarks: Hit hard layer (rock, cement, or hardpan) at 6 inches.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☒ Surface Water (A1)
- ☐ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1)(Nonriverine)
- ☐ Sediment Deposits (B2)(Nonriverine)
- ☐ Drift Deposits (B3)(Nonriverine)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in PLowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1)(Riverine)
- ☐ Sediment Deposits (B2)(Riverine)
- ☐ Drift Deposits (B3)(Riverine)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface water present? ☒ Yes ☐ No Depth (inches): 1

Water table present? ☐ Yes ☐ No Depth (inches):

Saturation Present? (includes capillary fringe) ☒ Yes ☐ No Depth (inches): 6

Wetland Hydrology Present ? ☒ **Yes** ☐ **No**

Describe recorded data (stream guage, monitoring well, aerial photos, etc.) if available.

Remarks: Soil saturated down to hard layer, which may be rock, cement, or hardpan.

Appendix B - Representative Photographs of the Study Area

Top: Buildings and dense shrub habitat.

Bottom: Eucalyptus trees and disced understory.

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Top: Disced west-facing hillside with margins of undisced habitat.

Bottom: Small wetland in southern corner of the Project Area.

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Top: Small coastal saltmarsh habitat found in the southern portion of the Project Area.

Bottom: Sandy shoreline habitat found in the southern portion of the Project Area.

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Appendix C - Plant Species Observed in the Study Area

Appendix C. Plants observed in the General Mills Study Area on June 25, 2007

Species	Common Name
Acacia melanoxylon	blackwood acacia
Acacia spp.	acacia
Acer macrophyllum	big leaf maple
Avena sp.	wild oats
Brassica nigra	black mustard
Brassica rapa	field mustard
Bromus diandrus	ripgut brome
Bromus hordeaceus	soft chess
Carduus pycnocephalus	Italian thistle
Cichorium intybus	chicory
Cirsium vulgare	bull thistle
Convolvulus arvensis	bindweed
Cynara cardunculus	artichoke thistle
Cynodon dactylon	Bermuda grass
Distichlis spicata	salt grass
Epilobium ciliatum	willowherb
Eschscholzia californica	California poppy
Eucalyptus globulus	blue gum
Eucalyptus spp.	eucalyptus
Ficus sp.	fig
Foeniculum vulgare	fennel
Geranium dissectum	geranium
Hedera helix	English ivy
Heteromeles arbutifolia	toyon
Hordeum murinum	barley
Jaumea carnosa	jaumea

Species	Common Name
Juglans regia	English walnut
Juniperus sp.	ornamental juniper
Lactuca serriola	prickly lettuce
Larix sp.?	ornamental larch
Lepidium latifolium	peppergrass
Lolium multiflorum	Italian ryegrass
Malva neglecta	common mallow
Malvella leprosa	alkali mallow
Medicago polymorpha	California bur clover
Melilotus indica	sourclover
Nerium oleander	oleander
Paspalum dilatatum	dallis grass
Phalaris aquatica	Harding grass
Phalaris minor	littleseed canarygrass
Phoenix sp.?	ornamental palm
Phyla nodiflora	lippia
Picris echioides	bristly ox-tongue
Pinus attenuata	knobcone pine
Pinus muricatus	bishop pine
Plantago lanceolata	plantain
Platanus racemosa	sycamore
Polypogon monspeliensis	rabbitsfoot grass
Portulaca oleracea	common purslane
Prunus sp.	cultivated cherry or plum
Quercus agrifolia	coast live oak
Raphanus sativus	radish
Rosa sp.	rose
Rubus discolor	blackberry

Species	Common Name
Rumex crispus	curly dock
Rumex pulcher	fiddle dock
Salicornia virginica	pickleweed
Scirpus cernuus	annual tule
Sonchus asper ssp. *asper*	prickly sow thistle
Sorghum halepense	Johnsongrass
Spartium junceum	Spanish broom
Spergularia marina	sand-spurrey
Stellaria media	common chickweed
Toxicodendron diversilobum	poison oak
Tribulus terrestris	puncture vine
Typha angustifolia	narrow leaved cattail

Appendix D - Calculations for Corps Jurisdictional High Tide Line and Elevations of Published Tidal Datums

Appendix D. Calculations for Corps Jurisdictional High Tide Line (HTL) and Elevations of Published Tidal Datums for the General Mills Study Area.

Table D-1. Calculations for Corps Jurisdictional High Tide Line (HTL) for General Mills, using NOAA Mare Island Naval Shipyard, Carquinez Strait (Station ID 9415218) published tidal benchmarks (NOAA 2005).

- HTL at Presidio (San Francisco, San Francisco Bay tide station, ID 9414290)
  = 7.2 feet MLLW *

- MHHW at Presidio (San Francisco, San Francisco Bay tide station, ID 9414290)
  = 5.84 feet MLLW

- **High tide correction for Mare Island Naval Shipyard, Carquinez Strait tide station**
  = MHHW at Mare Island Naval Shipyard, Carquinez Strait - MHHW at Presidio
  = 5.86 feet MLLW - 5.84 feet MLLW
  = 0.02 feet MLLW

- **Calculated High Tide Line at Mare Island Naval Shipyard, Carquinez Strait in MLLW**
  = HTL at Presidio + High tide correction for Mare Island Naval Shipyard, Carquinez Strait
  = 7.2 feet MLLW + 0.02 feet MLLW
  = 7.22 feet MLLW
  = 7.22 feet MLLW - correction to NAVD 88
  = 7.22 feet MLLW - -0.43 feet NAVD 88
  = 7.65 feet NAVD 88

* Value determined by the Corps.

Table D-2. Elevations of published tidal datums (NOAA 2005) converted to feet MLLW.

Published NOAA tidal datums at Mare Island Naval Shipyard, Carquinez Strait referred to MLLW::

Mean Higher High Water (MHHW)	= 1.787 m = 5.86 ft
Mean High Water (MHW)	= 1.615 m = 5.30 ft
Mean Tide Level (MTL)	= 0.954 m = 3.13 ft
Mean Sea Level (MSL)	= 0.952 m = 3.12 ft
Mean Low Water (MLW)	= 0.293 m = 0.96 ft
Mean Lower Low Water (MLLW)	= 0.000 m = 0.00 ft
North American Vertical Datum - 88 (NAVD 88)	= -0.0130 m = -0.43 ft

Elevations of tidal datums at Mare Island Naval Shipyard, Carquinez Strait referred to MLLW and converted to NAVD 88::

Mean Higher High Water (MHHW)	= 5.86 ft - -0.43 = 6.29 ft NAVD 88
Mean High Water (MHW)	= 5.30 ft - -0.43 = 5.73 ft
Mean Tide Level (MTL)	= 3.13 ft - -0.43 = 3.56 ft
Mean Sea Level (MSL)	= 3.12 ft - -0.43 = 3.55 ft
Mean Low Water (MLW)	= 0.96 ft - -0.43 = 1.39 ft
Mean Lower Low Water (MLLW)	= 0.00 ft - -0.43 = 0.43 ft

APPENDIX E

KELLY 2007 RECONNAISSANCE PLANT SURVEY

Kelly Biological Consulting
543 Sequoia Dr.
San Anselmo, CA 94960
(415) 482-9703

P.O. Box 1625
Truckee, CA 96160
(530) 582-9713

TO: Mike Josselyn, WRA

FROM: Micki Kelly, Kelly Biological Consulting

DATE: March 23, 2007

RE: General Mills Site Plant Survey

Overview

Micki Kelly, PWS, Plant Ecologist conducted a reconnaissance plant survey of the General Mills site on Derr Street in Vallejo, adjacent to Mare Island Strait. The purpose of the survey was to search for Johnny-jump-up (*Viola pedunculata*) and potential special status plant species. Table 1 lists special status plants that occur on the Mare Island quad. No Johnny-jump-up or potential special status plant species were found during the one survey.

Methods

The Study Area is comprised of the portion of the General Mills site that is with the security fencing, excluding the buildings, landscaping, paved areas, the narrow strip of the property next to the strait, and the remediation areas. On March 14, 2007, Ms. Kelly traversed the Study Area on foot, following meander transects. All plant taxa observed were keyed to the species, subspecies, or variety level where possible (Table 2).

Results

The flat portion of the site, adjacent to the water includes buildings, pavement, landscaping, and remediation areas. The plant community on the hills on the southeastern 2/3 of the site is predominately eucalyptus (*Eucalyptus* spp.) and acacia (*Acacia* spp.) forest interspersed with a few pines (*Pinus attenuata* and *P. muricatus*). The understory is non-native grassland. The dominant species include oxalis (*Oxalis pes-caprae*), miner's lettuce (*Montia parvifolia*), and a grass that could not be identified due to its phenology (no flowers). The hilly northeastern 1/3 is non-native grassland, predominantly cultivated oats (*Avena sativa*), black mustard (*Brassica nigra*), and fennel (*Foeniculum vulgare*). Most of the site, including the areas under the trees, is disked or mowed annually. Several fennel patches in the northeastern portion of the site have been allowed to remain standing to provide pheasant habitat. There was a recent landslide on a portion of the hill adjacent to the mill. The material that slid has been removed

At the time of the survey Johnny-jump-up were flowering in Napa and Rancho Cordova (per WRA staff, March 13, 2007). However, no Johnny-jump-up or potential special status plant species were observed on the General Mills site. It should be noted that due to the remediation, the area adjacent to the water (mostly rip-rap) was not surveyed.

Table 1. Potential Special Status Plant Species
(Source CNPS Inventory website www.cnps.com, accessed March 13, 2007

Scientific Name	Common Name	Status[1]	Habitat and Ecology	Potential for Occurrence
Aster lentus	Suisun marsh aster	CNPS 1B.2	Asteraceae. Rhizomatous herb. Marshes and swamps (brackish and freshwater). Flowers May-Nov. Elevation range 0-3 meters.	Unlikely, though the area adjacent to the water should be surveyed.
Cordylanthus mollis ssp. *mollis*	soft bird's beak	FE CR CNPS 1B.2	Scrophulariaceae. Annual herb. Hemiparisitic. Marshes and swamps. Flowers July-Nov. Elevation range 0-3 meters.	Unlikely, though the area adjacent to the water should be surveyed.
Fritillaria liliacea	fragrant fritillary	CNPS 1B.2	Liliaceae. Bulbiferous herb. Cismontane woodland, Coastal prairie, Coastal scrub, Valley and foothill grassland/often serpentinite. Flowers Feb-Apr. Elevation range 3-410 meters.	Unlikely, due to annual disking. Though could occur in the steep areas that are not disked.
Helianthella castanea	Diablo helianthella	CNPS 1B.2	Asteraceae. Perennial herb. Broadleafed upland forest, Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland, Valley and foothill grassland. Mar-Jun. Elevation range 60 - 1300 meters.	Unlikely, due to annual disking, though could occur in the steep areas that are not disked.
Lilaeopsis masonii	Mason's lilaeopsis	CR CNPS 1B.1	Apiaceae. Rhizomatous herb. Marshes and swamps (brackish and freshwater). Riparian scrub. Flowers Apr-Nov. Elevation range 0-10 meters.	Unlikely, though the area adjacent to the water should be surveyed.
Senecio aphanactis	rayless ragwort	CNPS 2.2	Asteraceae. Annual herb. Chaparral, Cismontane woodland, Coastal scrub/alkaline. Flowers Jan-Apr. Elevation range 15-800 meters.	Unlikely, due to annual disking, though could occur in the steep areas that are not disked.

[1] The status codes used above are:

FE	Federally Endangered
CR	State Rare
CNPS 1B.1	LIST 1B: Rare, threatened, or endangered in California and elsewhere. 0.1: Seriously endangered in California
CNPS 1B.2	LIST 1B: Rare, threatened, or endangered in California and elsewhere. 0.2: Fairly endangered in California
CNPS 2.2	LIST 2: Rare, threatened, or endangered in California, but more common elsewhere. 0.2: Fairly endangered in California

Table 2. Plant Species Observed on the General Mills Site, March 14, 2007

Scientific Name	Common Name
Acacia decurrens	green wattle
Acacia longifolia	golden wattle
Acacia melanoxylon	blackwood acacia
Acacia sp.	wattle
Acer macrophyllum	big leaf maple
Amsinkia tessellata var. *tessellata*	devil's lettuce
Avena sativa	cultivated oat
Brassica nigra	black mustard
Brassica rapa	field mustard
Bromus diandrus	ripgut brome
Bromus hordeaceus	soft chess
Calystegia sp.	morning-glory
Cardamine sp.	bitter cress
Cirsium pycnocephalus	Italian thistle
Cynara cardunculus	artichoke thistle
Cytisus or *Genista* sp.[2]	broom
Distichlis spicata	salt grass
Epilobium sp.	willow herb
Erodium cicutarium	storksbill
Erodium moschatum	storksbill
Eschscholzia californica	California poppy
Eucalyptus globulus	blue gum
Eucalyptus polyanthemos	silver dollar gum
Eucalyptus pulverulenta	silver leaved gum
Foeniculum vulgare	fennel
Galium aparine	goose grass
Geranium dissectum	geranium
Gnaphalium palustre	cudweed
Hedera helix	English ivy
Heteromeles arbutifolia	toyon
Hordeum murinum ssp. *murinum*	barley
Juniperus sp.	cultivated juniper
Larix sp.?	cultivated larch
Lolium multiflorum	Italian ryegrass
Lupinus succulentus	lupine
Lythrum hyssopifolium	lythrum
Malva neglecta	common mallow
Medicago polymorpha	California bur clover
Montia parvifolia	miner's lettuce
Oxalis pes-caprae	oxalis
Phoenix sp.?	cultivated palm
Picris echioides	bristly ox-tongue

[2] No flowers or leaves available for identification

Scientific Name	Common Name
Pinus attenuata	knobcone pine
Pinus muricatus	bishop pine
Plantago lanceolata	plantain
Poa annua	bluegrass
Polygonum sp.	polygonum
Polypogon maritimus	Mediterranean beard grass
Prunus sp.	cultivated cherry or apple
Quercus agrifolia	coast live oak
Raphanus sativus	radish
Rubus sp.	cultivated blackberry
Rumex crispus	curley dock
Senecio vulgaris	groundsel
Sidalcea malviflora	checker mallow
Sonchus asper ssp. *asper*	prickly sow thistle
Spergularia marina	sand-spurrey
Stellaria media	common chickweed
Taraxacum officinale	dandelion
Toxicodendron diversilobum	poison oak
Trifolium albopurpureum	clover
Trifolium sp.	clover
Typha angustifolia	narrow leaved cattail
Vicia sativa ssp. *sativa*	vetch
Vulpia myuros	vulpia
	various cultivars around the residence

APPENDIX F

MONARCH WINTER ROOST ASSESSMENT AND SURVEYS

ENVIRONMENTAL CONSULTANTS

Memorandum

Date: January 3, 2008

Subject: **Monarch Butterfly Roost Surveys on General Mills Project, Vallejo, Solano County, California**

In June 2007 WRA conducted a biological resource assessment of the General Mills Project site (Project Area). A California Natural Diversity Database search was completed prior to the site visit. This search yielded a record of a historical Monarch butterfly winter roost overlapping with the Project Area. In order to determine the potential of this historical roost site currently being used, WRA conducted a roost habitat assessment on November 30, 2007 to qualitatively describe potential roost habitat observed in the Project Area, and conducted two roost surveys on November 30, 2007 and January 3, 2008 during the primary roosting period to determine whether the Project Area provides primary winter roosting habitat for Monarch butterflies.

According to Urquhart (1960) suitable Monarch butterfly roosting habitat may be of two types: a) temporary aggregations that are transient clusters of short duration (locations provide brief morning sunlight, with midday and afternoon shade); and b) permanent roosts that are long term (past the winter solstice) hibernal clusters, where overwintering occurs otherwise known as primary winter roost sites. A winter roosting site was documented in the Project Area boundary in December 1997 (see attached record) and on the west side of Mare Island Strait above the Mare Island Naval Shipyard the following March (also attached, CNDDB 2007). According to Arnold (2004), primary winter cluster sites provide the following conditions:

- trees typically receive afternoon sunlight;
- windbreak or buffer trees are present;
- characterized by groves of trees of mixed height and diameter, with an under story of brush and sapling trees;
- often a small clearing within a stand of trees is present (provides shelter), or formed by a combination of the trees and surrounding topography
- clusters are located typically between 15 to 50 feet above ground (range 6 to 75 feet)
- typical tree species: Blue Gum (*Eucalyptus globulus*), River Gum (*E.camaldulensis)*, Monterey Pine (*Pinus radiata*), Monterey Cypress (*Cupressus macrocarpa*), other native/introduced trees of sufficient height.
- topography used: gullies, canyons, creek drainages, and the lee sides of hills; or adjacent to man-made structures
- overwintering habitat typically located near or adjacent to adequate nectar & water sources.

2169-G East Francisco Blvd., San Rafael, CA 94901 (415) 454-8868 tel (415) 454-0129 fax info@wra-ca.com www.wra-ca.com

In order to determine the status of the eucalyptus grove as a winter roost site, two surveys were conducted during the roosting season, November 30 and January 3. Surveys were conducted in the early morning and at temperatures below 55 degrees, in order to improve the probability of detecting Monarchs if they were present.

Habitat Assessment Results

The eucalyptus groves in the Project Area are documented to provide winter roosting habitat. The record indicates that there were "hundreds" of Monarchs in the roost detected. The observation in December of 1997 is the only record of this grove being used as a winter roost. The winter roost located on the west side of Mare Island Strait was documented by the same observer to have "millions" of butterflies the following March. The eucalyptus grove may provide roosting habitat for Monarchs, but is most likely to provide a transient roost site, rather than a permanent one if used by Monarchs. This is supported by the dual observations on either side of Mare Island Strait, and the comparatively small number of Monarchs detected in the grove in the Project Area boundary prior to the winter solstice. Two aspects of the eucalyptus grove that may make it less than desirable as a primary roost habitat are the lack of a significant understory due to regular discing and the lack of a significant fresh water source early in the roosting season.

Roost Surveys Results

The two surveys completed during peak roosting season resulted in the sighting of no Monarchs.

Conclusions

Based on these results, the eucalyptus grove in the Project Area does not provide a primary winter roost site for the Monarch butterfly. The most likely interpretation of the historical occurrence of the eucalyptus grove as a winter roost, is the temporary use of the trees in a year that had an abundant overwintering Monarch population. It is unlikely that the grove is a primary roost site. It is possible the eucalyptus grove in the Project Area boundary could be used as a temporary roost site in years of exceptionally high numbers of overwintering Monarchs.

References

Anderson, R.A. 2004. Appendix B: Sensitive Invertebrates Report. Southern California Gas Surplus Property: Invertebrate Report. ESA / 202639.

Urquhart, F.A. 1960. The Monarch butterfly. University of Toronto Press. 361 pp.

FIELD NOTES SUMMARY **OBSERVER(S):** J Doudna

General Mills
Monarch Winter Roost Survey
Vallejo
Solano County, CA

DATE/TIME: 11/30/07 0800-1000 **WEATHER:** Clear, 45 degrees, Wind: 0-2 mph

Purpose: Determine presence of Monarch winter roost site

Methods: In order to determine the status of the eucalyptus grove as a Monarch winter roost site, a survey was conducted between sunrise and 0900 and at temperatures below 55 degrees, in order to improve the probability of detecting Monarchs if they were present. After 0900, habitat assessment surveys continued until 1000.

Results: No Monarchs were detected during the survey. Fresh water was limited in the vicinity of the eucalyptus grove. Few potential nectar plants were present in the vicinity of the grove. It was determined that the grove was a marginally suitable habitat for a Monarch winter roost.

FIELD NOTES SUMMARY **OBSERVER(S):** J Doudna

General Mills
Monarch Winter Roost Survey
Vallejo
Solano County, CA

DATE/TIME: 01/03/08 0700-0830 **WEATHER:** Cloudy, 48 degrees, Wind: 0-5 mph

Purpose: Determine presence of Monarch winter roost site

Methods: In order to determine the status of the eucalyptus grove as a Monarch winter roost site, a survey was conducted between sunrise and 0900 and at temperatures below 55 degrees, in order to improve the probability of detecting Monarchs if they were present.

Results: No Monarchs were detected during the survey.

Other comments: No butterflies were detected in the Project Area. Potential nectar plants such as mustard were beginning to develop flowers. The small wetlands in the Project Area did not have enough inundation to provide a significant fresh water source. No other significant and continuos sources of water were detected in the Project Area.

Danaus plexippus

monarch butterfly

Element Code: IILEPP2010

Status	NDDB Element Ranks	Other Lists
Federal: None	**Global:** G5	**CDFG Status:**
State: None	**State:** S3	

Habitat Associations

General: WINTER ROOST SITES EXTEND ALONG THE COAST FROM NORTHERN MENDOCINO TO BAJA CALIFORNIA, MEXICO.

Micro: ROOSTS LOCATED IN WIND-PROTECTED TREE GROVES (EUCALYPTUS, MONTEREY PINE, CYPRESS), WITH NECTAR AND WATER SOURCES NEARBY.

Occurrence No. 327 **Map Index:** 38517 **EO Index:** 33524

Occ Rank: Excellent
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1997-12-20
Site: 1997-12-20

Record Last Updated: 1998-03-31

Quad Summary: Benicia (3812212/482C)
County Summary: Solano

Lat/Long: 38.07979º / -122.24132º
UTM: Zone-10 N4214939 E566538
Mapping Precision: NON-SPECIFIC
Symbol Type: POINT
Radius: 1/10 mile

Township: 03N
Range: 03W
Section: 30 **Qtr:** XX
Meridian: M
Elevation: 140 ft

Location: BETWEEN HWY 29 AND MARE ISLAND STRAIT, 0.5 MILE NW OF THE INTERSECTION OF HWY 29 AND I-80, VALLEJO

Location Detail: SITE IS A NATURALIZED BUFFER BETWEEN THE MILL AND SOME APARTMENTS, LOCATED ON A STEEP SLOPE ABOVE THE FLOUR MILL AND NAPA RIVER.

Ecological: OVERWINTERING SUBSTRATE CONSISTS OF TWO GROVES OF EUCALYPTUS TREES. ADDITIONAL TREES HAVE BEEN PLANTED IN THE AREA TO INCREASE THE BUFFER BETWEEN COMMERCIAL AND RESIDENTIAL.

Threat:

General: 100'S OBSERVED ON 20 DECEMBER 1997.

Owner/Manager: PVT

Sources

FRA97F0001 FRASER, MARY. FIELD SURVEY FORM FOR DANAUS PLEXIPPUS (WINTERING SITE). 1997-12-20.

Danaus plexippus

monarch butterfly

Element Code: IILEPP2010

Status	NDDB Element Ranks	Other Lists
Federal: None	**Global:** G5	**CDFG Status:**
State: None	**State:** S3	

Habitat Associations

General: WINTER ROOST SITES EXTEND ALONG THE COAST FROM NORTHERN MENDOCINO TO BAJA CALIFORNIA, MEXICO.

Micro: ROOSTS LOCATED IN WIND-PROTECTED TREE GROVES (EUCALYPTUS, MONTEREY PINE, CYPRESS), WITH NECTAR AND WATER SOURCES NEARBY.

Occurrence No. 19 **Map Index:** 33753 **EO Index:** 5572

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Fluctuating

Dates Last Seen
Element: 1998-03-13
Site: 1998-03-13

Record Last Updated: 1998-03-31

Quad Summary: Mare Island (3812213/483D)
County Summary: Solano

Lat/Long: 38.09669º / -122.27147º
UTM: Zone-10 N4216794 E563879
Mapping Precision: SPECIFIC
Symbol Type: POLYGON
Area: 13.6 acres

Township: 03N
Range: 04W
Section: 23 **Qtr:** XX
Meridian: M
Elevation: 10 ft

Location: ST PETERS CHAPEL AND CAPTAIN'S ROW, NEAR WALNUT AND CEDAR, MARE ISLAND NAVAL SHIPYARD, VALLEJO.

Location Detail: HISTORICAL EVIDENCE SUGGESTS THAT THIS HAS BEEN A MONARCH OVER-WINTERING SITE FOR DECADES.

Ecological: EUCALYPTUS TREES ARE THE SUBSTRATE USED.

Threat: MONARCHS NOT LISTED AS A SIGNIFICANT SPECIES IN RE-USE PLAN.

General: REPORTED TO CHRIS NAGANO BY ROBIN LEONG (AUDUBON SOCIETY). SMALL CLUSTERS OBSERVED IN 1983-84 AND 1984-85; SITE WAS NOT CHECKED, 1986-1989. NO MONARCHS PRESENT DURING FALL/WINTER 1990-91. "MILLIONS" OBSERVED ON 13 MARCH 1998.

Owner/Manager: DOD-MARE ISLAND NS

Sources

FRA98F0001 FRASER, MARY. FIELD SURVEY FORM FOR DANAUS PLEXIPPUS (WINTERING SITE). 1998-03-13.

SAK89F0001 SAKAI, WALTER H. STATE-WIDE SET OF FIELD SURVEY FORMS FOR MONARCH WINTERING SITES (5 PARTS), SURVEYD FROM 1984-1988. 1989-02-24.

SAK89M0001 SAKAI, W.H. QUAD MAPS OF MENDOCINO, SONOMA, MARIN, SOLANO, NAPA, CONTRA COSTA, AND ALAMEDA COUNTY MONARCH WINTERING SITES. 1989-02-24.

SAK89R0001 SAKAI, WALTER H. (SANTA MONICA COLLEGE). "THE WINTERING COLONIES OF THE MONARCH BUTTERFLY (DANAUS PLEXIPPUS) IN THE STATE OF CALIFORNIA.". 1989-XX-XX.

SAK91F0002 SAKAI, WALTER H. (SANTA MONICA COLLEGE). STATE-WIDE SET OF FIELD SURVEY FORMS FOR MONARCH WINTERING SITES SURVEYED IN WINTER 1990-91. 1991-XX-XX.