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BIOLOGICAL RESOURCES REPORT NOVEMBER 2006

FERNANDEZ RANCH PROJECT

Northwest Contra Costa County, California

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1.0 INTRODUCTION

This report describes the physical and biological resources on Fernandez Ranch, a 702-acre open space preserve located just east of the City of Hercules and south of Highway 4 in northern Contra Costa County (Figure 1). The Ranch was recently acquired by Muir Heritage Land Trust (MHLT), a non-profit land conservation organization based in Martinez, California. In early 2006, MHLT contracted a consultant team led by Restoration Design Group of Berkeley, California to develop 1) a restoration plan for the portion of Rodeo Creek that traverses the ranch, 2) a public access plan involving development of a parking/staging area and a trails network, and 3) a long-term land management plan for the conservation, restoration and management of site physical and biological resources. These plans are currently being prepared and will be completed by the end of 2006.

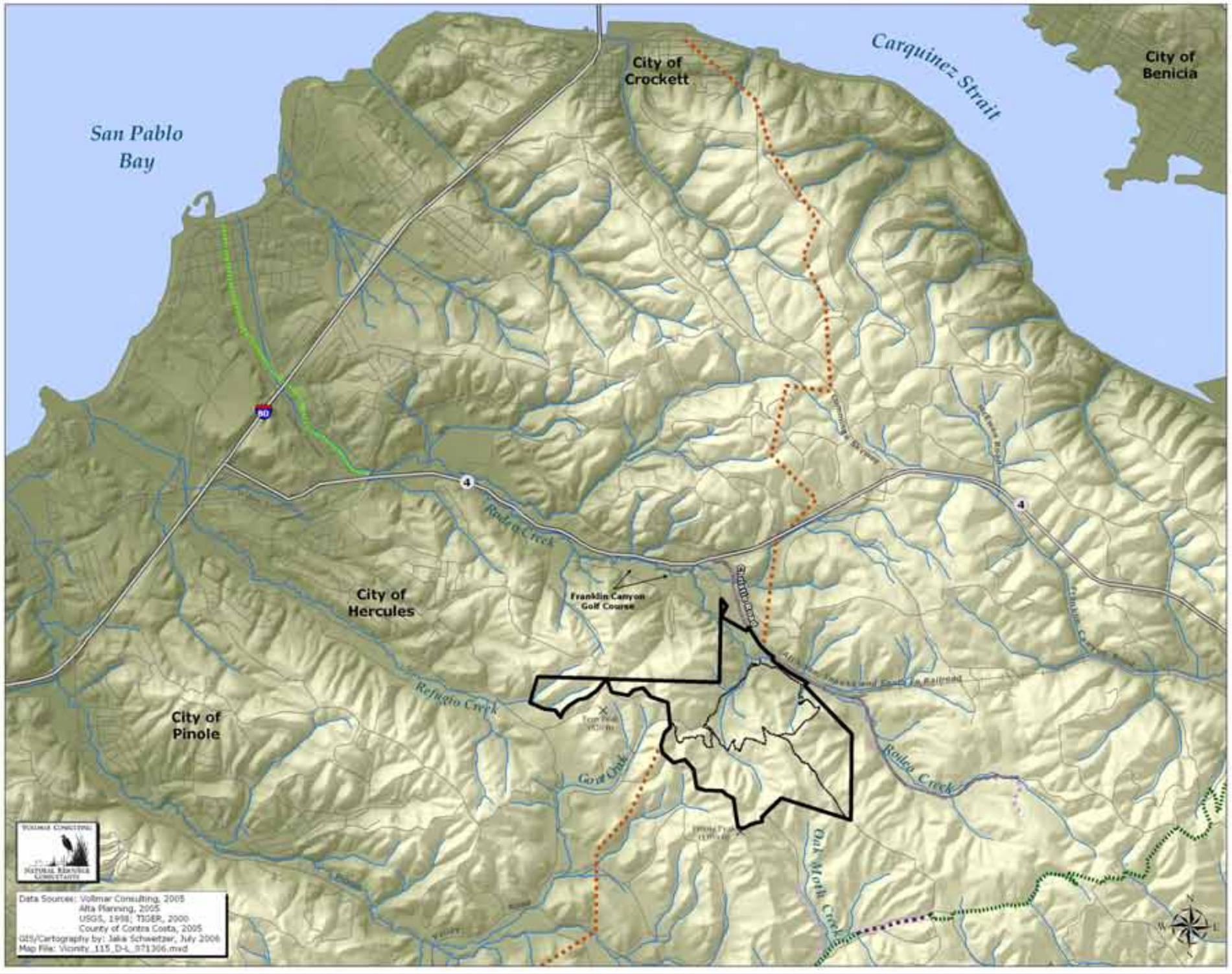
The purpose of this report is to describe the baseline physical and biological conditions on the Ranch, with a focus on sensitive biological resources, for use in obtaining environmental permits in support of Rodeo Creek restoration activities, development of the staging parking area and trails network, and other possible future restoration, management, and development projects. Information from this report will be incorporated into the long-term land management plan being prepared for the Ranch. This report was prepared by Vollmar Consulting with editorial review and expert consultation provided by numerous other organizations and individuals as described in this report.

2.0 PROJECT HISTORY AND BACKGROUND

In July 2005, the MHLT completed purchase of the 702-acre Fernandez Ranch. The purchase was made possible through a combination of funding sources including the California Coastal Conservancy, the National Oceanic and Atmospheric Administration (NOAA), private donors, and other sources. The Ranch had been in the Fernandez family since 1860 when Bernardo Fernandez first bought 9,000 acres of land that included this Ranch. Since that time, the Ranch has been used primarily as rangeland for cattle ranching. Overall, the Ranch has retained a high level of ecological value, incorporating forest, woodland, scrub, grassland, and wetland habitats characteristic of northern Contra Costa County's beautiful open space lands. The acquisition of the ranch by MHLT will ensure that the Ranch is preserved as natural habitat and open space in perpetuity since property use will be restricted to habitat restoration and preservation, protection of natural areas, and public recreation. Within approximately five years, 568 acres of the ranch will be transferred to the East Bay Regional Park District (EBRPD), pursuant to an agreement made at the time of purchase.

Fernandez Ranch is at the western edge of the 60,000-acre Briones Hills Agricultural Preserve, which includes 10,000 acres of East Bay Municipal Utility District watershed lands as well as East Bay Regional Park District's 6,000 acre Briones Regional Park. The Ranch incorporates the upper reaches of the Rodeo Creek Watershed, Refugio Creek Watershed and Pinole Creek Watershed. Preservation of the Ranch as an open space preserve provides conservation and restoration opportunities for the natural habitats present within these watersheds as well as numerous special-status wildlife species known to occur on the Ranch including California red-legged frog (*Rana draytonii*), Alameda whipsnake (*Masticophis lateralis euryxanthus*), San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*), western pond turtle (*Clemmys marmorata*), American badger (*Taxidea taxus*), and various raptor species. The oak woodland, annual grassland, riparian and aquatic habitats also support many native plant species including special-status plants such as Diablo helianthella (*Helianthella castanea*) and robust monardella (*Monardella villosa* ssp. *robusta*), and regionally unique species such as Oregon oak (*Quercus garryana* var. *garryana*) and Bolander's woodland star (*Lithophragma bolanderi*).

FIGURE 1
Regional Vicinity Map
Fernandez Ranch
Muir Heritage Land Trust
Contra Costa County, California



Legend

Regional and Project Site Trails
- Existing Rodeo Creek Trail
- Existing Contra Costa County Feeder 1
- Contra Costa County Feeder 1, Potential
- Contra Costa County Feeder 1, Easement
- Potential Bay Area Ridge Trail
- Proposed Trail Alignment on Project Site
- Fernandez Ranch Boundary

Reference Features
- Highway
- Minor Road
- Railroad
- Creek

Elevation Range (NGVD Meters)

Highest on Map: ~323 (1,019-ft on project site)

Lowest on Map: Sea Level (at San Pablo Bay)

1:40,000 (at tabloid layout)

0 0.5 1 Kilometers

0 0.5 1 Miles

The Coastal Conservancy has contributed $100,000 and other sources of funding have provided an additional $50,000 for planning restoration of Rodeo Creek on the Ranch. The purpose of the restoration is to reconnect the stream to the floodplain, restore a dynamic equilibrium to the stream, restore native plant species in the riparian corridor, and enhance and protect the habitat for sensitive species. The restoration will also include the removal of a significant amount of large debris, including housing materials and vehicles in the creek corridor.

Development of the public access plan is being funded in part by the Bay Area Ridge Trail Council (BARTC). The parking/staging area will accommodate both vehicles and horse trailers to provide for multi-use recreational access. The trails network will be developed throughout most of the Ranch and will provide hikers, bikers, and equestrians with the opportunity to enjoy the natural beauty of the Ranch and access remote parts of the Ranch including high ridge tops that provide exceptional vistas of the San Francisco Bay region. The trail network will also include a segment accessible to the disabled. BARTC has proposed that the trails network incorporates a segment of the Bay Area Ridge Trail. This segment will traverse the Ranch and link to future ridge trail segments to the north and south of the Ranch. BARTC's vision is to complete a 500-mile multi-use recreational trail on the ridge tops surrounding San Francisco Bay. The Ranch will provide approximately 2.5 miles of a new Bay Area Ridge Trail segment.

The land management plan will focus on conserving and improving the integrity of physical and biological resources on the Ranch, conserving and restoring sensitive habitats and special-status species, and maintaining ranching as part of the conservation of agricultural opportunities in the northern Contra Costa County region.

3.0 METHODS

The information presented in this report was gathered through a variety of methods including: review of existing information; discussions with experts familiar with the region and its associated physical and biological resources; acquisition, development and analysis of regional and site geologic and geomorphic data using Geographic Information Systems (GIS); site field surveys; and analyses of data collected through the surveys. The methods used for these efforts are summarized below.

3.1 Review of Existing Information

A variety of existing information was gathered and reviewed as part of the development of this report. Sources of information included:

- Franklin Ridge Wildlife and Trail Corridor Conceptual Area Protection Plan (CAPP) (Sycamore Associates 2003)
- Soil Survey of Contra Costa County, California (SCS 1977)
- Hydric Soils List of California (SCS 1993)
- Hydric Soils List of the United States (SCS 1991)
- Site and Regional Aerial Photographs obtained from U.S. Geologic Survey (USGS 2004)
- RareFind, version 3.0.5, database of special-status species maintained by California Department of Fish and Game (CDFG 2005)
- On-line Inventory of Rare and Endangered Vascular Plants of California, maintained by California Native Plant Society (CNPS 2006)
- Special Animals List, maintained by California Department of Fish and Game (CDFG 2006)

3.2 Expert Consultations

Several expert biologists were consulted to provide input on specific resource issues on the site. These experts included:

- John Tucker, Botanist and Professor Emeritus, University of California, Davis
- Bruce Pavlik, Botanist and Professor of Biology, Mills College
- Mark Allaback, Wildlife Biologist and CRLF Expert, BioSearch Associates
- Jeff Alvarez, Wildlife Biologist, The Wildlife Project

3.3 Field Surveys

Biologists from Vollmar Consulting conducted field surveys during the winter and spring of 2006. Surveys included: site-wide habitat mapping; delineation of potential jurisdictional wetlands within proposed work areas; targeted surveys for special-status wildlife and plant species; targeted surveys for invasive bullfrogs (*Rana catesbeiana*) and noxious weeds; and other specialized surveys including visual and dip-net surveys and ecological assessments of aquatic habitats, and morphological evaluations of the valley oaks (*Quercus lobata*), Oregon oaks, and their apparent hybrids on the site. Table 1 is a summary of the surveys conducted including date, staff members involved, and survey purpose.

3.3.1 Habitat Mapping

Numerous site visits were conducted to characterize and map the plant communities, aquatic habitats, rock outcrops, and other habitat features present on the Ranch. Plant community classification followed a modified version of the classification system based on the current California Department of Fish and Game system (CDFG 2006) but also related to Holland (1986) and Sawyer Keeler-Wolf (1995). Mapped plant communities were differentiated into forest, woodland, scrub, grassland, and herbaceous community types. Careful attention was given to the differentiating and mapping CDFG–designated sensitive plant communities including riparian and wetland habitats, oak woodlands, native grass stands and wildflower fields. Careful attention was also given to differentiating and mapping scrub habitats and rock outcrops since they are considered to provide preferred habitat for Alameda whipsnake. Wetland habitats were assessed and characterized for their potential to provide breeding habitat for target special-status species as well as other species of interest including California red-legged frog, California newt (*Taricha torosa*), California tiger salamander (*Ambystoma californiense*), creek-associated aquatic invertebrates, vernal pool fairy shrimp (*Branchinecta lynchi*), and vernal pool associated plants.

Habitat mapping was done both remotely using aerial photography, and in the field using a professional GPS units (Trimble GeoXT) with sub-meter accuracy. Smaller features of interests such as seasonal wetlands, seasonal pools, small scrub patches, and rock outcrops were mapped in the field with GPS units. Larger features such as woodland and forest stands were mapped remotely, then confirmed by biologists in the field. Jake Schweitzer directed all GPS unit set up and file management and prepared most report maps. Josh Phillips prepared the plant communities map with assistance from Mr. Schweitzer.

A delineation of potential jurisdictional Waters of the U.S. (wetlands and 'other waters') was conducted within Rodeo Creek, the floodplain terrace bordering Rodeo Creek, and along a 100' buffer centered on all proposed trail alignments. Fieldwork for the delineation was conducted on May 23, 24 and 26, and June 20, 2006. The delineation was conducted to identify potential jurisdictional waters within possible work areas associated with restoration of Rodeo Creek and development of the parking/staging area and trails network. The methods and results of the delineation are summarized in a separate report. Information on the characteristics and distribution of different types of wetlands and other waters on the site was incorporated in the habitat characterization and mapping included in this report.

Table 1. Schedule and Description of Surveys Conducted at Fernandez Ranch, Contra Costa County by Vollmar Consulting during 2006 Field Season.

Date	Personnel	Survey Type/Purpose
01/12/06	JV, BB	- Initial Site Walk, Dip-net Seasonal Pools for Aquatic Invertebrates
01/25/06	JV, MA	- Visual Surveys for CRLF and Bullfrog Adults/Egg Masses in Stock Ponds/Rodeo Crk - Dip-net Surveys in Stock Ponds/Seasonal Pools for Aquatic Invertebrates
03/27/06	JV, CP, JS, JP	- Initial Habitat Mapping - Early Season Special-Status Plant Surveys and Floristic Inventory - Dip-net Surveys in Creeks and Ponds for Amphibians and Aquatic Invertebrates
04/07/06	CP, JS	- Habitat Mapping - Early Season Special-Status Plant Surveys and Floristic Inventory
05/02/06 05/03/06 05/08/06 05/09/06	JV, CP, JS, JP	- Habitat Mapping - Peak Spring Special-Status Plant Surveys and Floristic Inventory - Noxious Weed Mapping - Visual Surveys of Aquatic Habitats for Amphibians - Initial Assessment of Potential Jurisdictional Wetlands
05/23/06	CP, JP	- Field Check and Refinement of Habitat Mapping - Peak Spring Special-Status Plant Surveys and Floristic Inventory
05/23/06 05/26/06	JV, KL	- Wetland Delineation - Field Check of Riparian Habitat and Creek Mapping - *Quercus lobata* and *Q. garryana* var. *garryana* specimen collections for Bruce Pavlik
06/09/06	JV, JP	- Night Spotlight Surveys for CRLF and Bullfrogs in Stock Ponds and Rodeo Creek
06/20/06	JV, CP, JS	- Habitat Mapping - Late Season Special-Status Plant Surveys - Wetland Delineation - Noxious Weed Mapping - *Quercus lobata* and *Q. garryana* var. *garryana* specimen collections for John Tucker
06/30/06	JV, LF	- Site Tour to Discuss Rangeland Management Issues
06/30/06	JV, JP	- Night Spotlight Surveys for CRLF and Bullfrogs in Rodeo Creek

Vollmar Consulting Staff

JV John Vollmar, Lead Botanist/Lead Wetland and Vegetation Ecologist
CP Cassie Pinnell, Staff Botanist/Wetland Ecologist
JS Jake Schweitzer, Lead GPS-GIS Specialist/Staff Ecologist
JP Josh Philips, Lead Wildlife Biologist/GIS Technician
KL Koa Lavery, Staff Ecologist and GIS Technician

Other Consultants

BB Bob Birkeland, Project Director, Restoration Design Group
LF Larry Ford, Rangeland Ecologist, Ford Consulting
MA Mark Allaback, CRLF Expert, BioSearch Associates

3.3.2 Special-Status Species Surveys

Wildlife

Prior to conducting site visits, the project team reviewed available information and compiled a list of special-status wildlife species with potential to occur on-site. For the purpose of this report, special-status wildlife species include:

- Species listed or proposed for listing by the federal government as threatened or endangered under the Federal Endangered Species Act (ESA) (50 CFR 17.12) and federal species of concern
- Species listed or proposed for listing by the State of California as rare, threatened, or endangered under the California Endangered Species Act (CESA) (14 Cal. Adm. Code 670.5), as state fully protected species, and state species of special concern
- Species that meet the definition of rare, threatened, or endangered under the California Environmental Quality Act (CEQA)
- Birds designated as birds of conservation concern by U.S. Fish and Wildlife Service (USFWS)

Visual surveys and aquatic invertebrate sampling was conducted in the context of characterizing the overall amphibian and aquatic invertebrate communities on the site for use in developing site management concepts. Specifically, visual surveys were conducted for adults, larvae, and egg masses of amphibians considered to be special-status or of management concern (i.e. California red-legged frog, California tiger salamander, California newt, and bullfrog) within stock ponds, seasonal pools, Rodeo Creek, and other creeks on the site. Aquatic sampling was conducted to characterize the aquatic invertebrate community on the site; this sampling provided incidental information relevant to determining the occurrence of special-status amphibian species and federally-listed large branchiopods on the site. On January 12, John Vollmar conducted visual and dip-net surveys in all seasonal pools on the Rodeo Creek floodplain terrace. On January 25, John Vollmar and Mark Allaback conducted day time visual surveys for adult frogs and egg masses along with dip-net surveys for aquatic invertebrates. On March 27, John Vollmar and Jake Schweitzer conducted visual and dip-net surveys in all stock ponds and various creeks. One May 26, John Vollmar conducted seine surveys in the largest stock pond on the site. On June 9, John Vollmar and Josh Phillips conducted night spotlight surveys for adult frogs within the two stock ponds on the site determined to provide suitable CRLF habitat as well as sections of Rodeo Creek and the largest tributary to Rodeo Creek. On June 30, John Vollmar conducted visual and dip-net surveys in the same two stock ponds and along the entire reach of Rodeo Creek on the site. That night, John Vollmar and Josh Phillips conducted night spotlight surveys along the lower reach of Rodeo Creek for frogs.

Habitat mapping, as describe above, included specific efforts to map potential habitat for target special-status wildlife species. No targeted surveys were conducted for Alameda whipsnake, which is assumed to occur on the site. Rather, scrub habitats which provide preferred habitat for the species, were carefully differentiated and mapped. Woodrat nests were mapped that were incidentally sighted during the course of other surveys. No targeted surveys were conducted for special-status bird species but observations regarding the occurrence of suitable burrow habitat for western burrowing owl were noted during the course of other surveys.

Observations of other, more common wildlife species were recorded during all site visits by all project biologists. Biologists identified all wildlife species observed on site, and recorded notes on location, general habitat and activity.

Plants

Prior to conducting site visits, the project team gathered and reviewed available botanical information and developed an annotated list of special-status plant species known or with potential to occur on the site. Sources used to develop this list included California Native Plant Society's (CNPS) On-line Inventory of Rare and Endangered Vascular Plants of California (CNPS 2006), CNPS Alameda and Contra Costa Counties Local Chapters List of Rare, Unusual and Significant Plants (CNPS 2004), and CDFG's California Natural Diversity Data Base (CNDDB 2006).

For the purposes of this report, special-status plant species include:

- Species listed or proposed for listing by the federal government as threatened or endangered under the Federal Endangered Species Act (ESA) (50 CFR 17.12) and federal species of concern
- Species listed or proposed for listing by the State of California as rare, threatened, or endangered under the California Endangered Species Act (CESA) (14 Cal. Adm. Code 670.5) and state species of special concern
- Species identified in California Native Plant Society's Online Inventory of Rare and Endangered Vascular Plants of California (CNPS 2006) as rare, threatened, or endangered in California (Lists 1 and 2), or on the review or watch lists (Lists 3 and 4, respectively)
- Species that meet the definition of rare, threatened, or endangered under CEQA.

Field surveys were conducted during early (March 27), peak (April 7- May 24), and late (June 20) bloom periods to ensure that the full suite of plant species present on the site would be detected. Surveys were conducted throughout the site. Full presence/absence surveys were conducted in all proposed work areas including the Rodeo Creek corridor and adjacent floodplain terrace and along all proposed trail alignments within a 100-ft buffer centered on the alignment. Thorough but not comprehensive presence/absence surveys were conducted throughout the rest of the site. Surveys focused on regions and habitats on the site identified as providing potential habitat for targeted species-status species such as rock outcrops, dry scrub habitats, woodland and forest margins, forest openings on steep slopes, and seasonal wetlands. All plant taxa encountered were identified to the lowest justifiable level (species, subspecies, or variety) and recorded. Most taxa were identified in the field. Those that could not be readily identified were bagged or pressed and brought back to the office for identification. All identified taxa were entered into a master list. The correct scientific and common names were verified through the Jepson Online Interchange maintained by U.C. Berkeley and the CNPS Online Inventory. This process ensured that all taxonomic and status updates were noted and incorporated.

3.3.3 Valley Oak and Oregon Oak Morphological Assessment

Several oak species occur on the site, both as singular trees and as woodlands. Deciduous oak species identified on the site include valley oak, Oregon oak, California black oak (*Quercus kelloggii*), and blue oak (*Quercus douglasii*). Coast live oak (*Quercus agrifolia*) is the only live (evergreen) oak on the site. Valley oak woodland is considered a sensitive plant community by CDFG. Oregon oaks are considered a locally rare and unique species by in Contra Costa County by the CNPS East Bay Chapter. All oak woodlands are protected under the State Oak Woodlands Preservation Act (Senate Bill 1334, Section 21083.4). All oak woodlands on the site were identified and mapped.

Numerous examples of apparent hybrids between different deciduous oaks were observed on the site including valley oak-Oregon oak hybrids and valley oak-blue oak hybrids. Many of the valley oaks on the site had an unusual distribution, occurring near the tops of ridges bordering mix oak woodlands and forests on adjacent north- and east-facing slopes. Occasional Oregon oaks were found scattered among these valley oaks and many of the valley oaks had leaf and acorn cup characteristics that tended toward Oregon

oak morphology, suggesting hybridization between the two species. Valley oaks typically occur in deeper alluvial soils on valley bottoms and terraces (hence 'valley' oak) and not on ridgelines. The occurrence of valley oaks on ridge lines on the site may be due to local climate or, perhaps, genetic mixing with Oregon oak that allows it to grow in this unusual setting.

To clarify the issue of valley oak-Oregon oak hybridization on the site, leaves and acorn cups were collected from multiple trees on the site representing the range of observed morphology. These specimens were sent to oak experts Dr. John Tucker, professor emeritus at U.C. Davis, and Dr. Bruce Pavlik of Mills College.

3.3.4 Invasive Wildlife Species Surveys

The primary invasive wildlife species identified as having potential to occur and of concern on the site included bullfrogs, feral pigs, and feral cats. Surveys for bullfrogs were conducted concurrently with the amphibian and aquatic invertebrate surveys described above. Incidental sightings of feral pigs and cats, as well as soil disturbance by feral pigs, were noted during all site visits.

3.3.5 Noxious Weed Mapping

Plants on the California Invasive Plant Council's (Cal-IPC) Invasive Plant Inventory as 'Moderate' or 'High' level invasive plants were considered noxious weeds. Complete mapping of all noxious weed occurrences was not conducted given the extensive distribution of certain species (especially yellow star-thistle (*Centaurea solstitialis*) and Italian thistle (*Carduus pycnocephalus*)). Rather, only large, fairly dense stands were mapped to shed light on the distribution pattern of each species across the site.

4.0 RESULTS

4.1 Summary of Key Findings

Fernandez Ranch incorporates 702 acres of steep to rolling hills and intervening creeks and alluvial terraces characteristic of the picturesque open space lands of northern Contra Costa County. The site can be divided into three primary geomorphic features, each of which has a unique set of associated plant communities and wildlife and plant species including various special-status species. These features include 1) the network of creeks on the site including Rodeo Creek, Refugio Creek, and other smaller tributary creeks, 2) the broad, relatively flat floodplain terrace bordering Rodeo Creek and, on a smaller scale, its largest tributary, and 3) the upland hillslopes that comprise the remainder of the site.

Rodeo Creek, Refugio Creek and the larger unnamed tributaries support corridors of mixed riparian habitat, primarily riparian forest and woodland dominated by coast live oak and California bay but also including pockets of willow and mixed riparian scrub. Smaller creeks and ephemeral drainages have little or no woody riparian habitat but do support herbaceous seasonal wetlands. Rodeo Creek and portions of other creeks on the site have been seriously down-cut by erosion, reducing their habitat values and causing ongoing environmental degradation. Both the creek channels and associated riparian habitats are considered 'sensitive' habitats as jurisdictional wetlands (Section 404 of the Clean Water Act), protected stream beds (Section 1602 of the State Fish and Game Code), and as designated sensitive habitats by CDFG. At least three special-status wildlife species are associated with the creeks on the site. Rodeo Creek, Refugio Creek, and the larger tributaries provide foraging, sheltering, and movement habitat for the California red-legged frog and western pond turtle. Two to three adult California red-legged frogs were observed in a man-made stock pond situated adjacent to the largest tributary and it is likely the frogs use the creeks on the site for foraging, sheltering and movement. A single western pond turtle was observed crawling up the bank of the lower reach of Rodeo Creek during surveys in late March. This turtle probably came up the creek channel from ponds on the Franklin Canyon Golf Course just downstream of the site. Banks adjacent to shaded riparian habitats are utilized by San Francisco dusky-footed woodrats for building nests (i.e., stick houses).

The broad, relatively flat floodplain terrace bordering Rodeo Creek is dominated by introduced annual grasslands but also supports scattered seasonal wetlands watered by small creeks that flow off of the adjacent hillslopes, meander across the terrace, and eventually drain into Rodeo Creek. These wetlands will likely be considered jurisdictional and subject to regulation if filled under Section 404 of the Clean Water Act. These wetlands remain saturated throughout the winter and early spring and support a mix of generalist seasonal wetland plants. Small alluvial fans have developed in a couple of areas where these creeks transition from the hillslopes to the flatter terrace. Interestingly, these fans support a low cover of plants species characteristic of coastal prairie habitat including California oatgrass (*Danthonia californica*) and western rush (*Juncus occidentalis*). This was generally the only setting where these species were found on the site. A small number of seasonal pools occur within the seasonal wetlands. They are distinguished from the seasonal wetlands in that they are ponded rather than saturated for prolonged periods during the winter and early spring. These seasonal pools support a mix of interesting seasonal wetland plants including some vernal pool indicator species such as rough-fruited popcornflower (*Plagiobothrys trachycarpus*), slender hairgrass (*Deschampsia danthonioides*), and hyssop loosestrife (*Lythrum hyssopifolium*). Though not observed during the field surveys, these pools provide potential habitat and potential restoration opportunities for Contra Costa goldfields (*Lasthenia conjugens*) and other vernal pool special-status plants known from the region. The floodplains provide suitable foraging habitat for northern harrier, a state species of special concern. Northern harriers were observed foraging in this area on a few occasions during field surveys. California red-legged frogs and Alameda whipsnakes likely migrate across and may occasionally forage on the floodplain terrace. No special-status plant species were found on the floodplain terrace.

The hillslopes support a mosaic of plant communities dominated by a mix of introduced annual grasslands and various forest and woodland types, primarily coast live oak/bay forest, mixed oak/bay forest, and valley oak woodland. There are limited stands of scrub habitat, generally occurring around the margins of the forests and woodlands. Predominant scrub types include coyote brush scrub, poison oak scrub, and mixed coyote brush/poison oak scrub. Several of the plant communities mapped within the hillslopes are considered 'sensitive' including the oak woodlands, a few localized native wildflower fields, and purple needlegrass (*Nassella pulchra*) and coastal prairie stands.

All of the oak woodlands on the site are afforded protection under provisions of the recently enacted State Woodlands Preservation Act (Senate Bill 1334, Section 21083.4) and are considered to be "sensitive" plant communities. There are large stands of valley oaks on the project site along ridgelines and upper slopes which is very unusual for the species. Valley oaks typically occur on deeper alluvial soils in valley bottoms (hence the name 'valley' oak). Its unusual distribution on the site may be explained by local climatic conditions or, possibly, hybridization with Oregon oak. Oregon oak, a regionally unique species according to the local chapter of the California Native Plant Society (CNPS), occurs sporadically in association with the valley oaks along the ridgelines and upper hillslopes. The project site is near the southern and eastern range of this species within the Coast Ranges which is why it is considered a CNPS regionally unique species. Only two blue oaks were found on the site, representing the westernmost extent of this species in the local region. This species is typically associated with drier, inland environments. California black oaks occur in low to moderate density within mixed oak/bay woodlands on the site.

The annual grasslands are heavily dominated by various introduced annual grasses. There are also significant stands of noxious weeds, especially yellow star-thistle and Italian thistle. Overall, there is fairly low cover of native wildflowers. The densest stands are concentrated in the far western portion of the site. These stands may be considered sensitive plant communities under CEQA as 'wildflower fields', a CDFG-designated sensitive plant community. There were only a few small stands of purple needlegrass, a native perennial bunchgrass, found within the annual grasslands. There were also a few small stands of marginal coastal prairie habitat. The native bunchgrass and coastal prairie stands may require consideration under CEQA as CDFG-designated sensitive habitats.

The scrub habitats on the site are not independently designated as sensitive habitats but do provide preferred habitat for the federal and state listed threatened Alameda whipsnake which is assumed to occur on the site.

The hillslopes provide suitable foraging, sheltering, and/or nesting habitat for several special-status wildlife species including Alameda whipsnake, California red-legged frog, western pond turtle, American badger, and San Francisco dusky-footed woodrat. Alameda whipsnake has been documented on adjacent properties and is assumed to occur on the site. This species is restricted to Contra Costa and Alameda counties and the site is within designated critical habitat for the species. Current data suggests that whipsnakes prefer scrub habitats and rock outcrops but can also utilize associated woodland and grassland habitats for foraging and movement (Swaim pers. comm., Alvarez 2006). Since the site is within designated critical habitat and the species is known to use a variety of different habitat types, the entire site is considered to provide potential habitat for the species. Several adult California red-legged frogs were observed in man-made stock pond within the hillslopes during the field surveys conducted for this project. Though there was no evidence of breeding, this stock pond and one other on the site provide potential breeding habitat for the species. Given their documented presence on the site, California red-legged frogs undoubtedly use the uplands for sheltering and movement. One American badger and several suspected badger dens were observed within the hillslope grasslands on the site. San Francisco dusky-footed woodrat stick nests were incidentally observed in the understory of dense coast live/bay forest on the site, typically adjacent to a creek channel.

Two special-status plant species were identified within the hillslopes including Diablo helianthella and robust monardella. Both are CNPS List 1B species (considered rare or endangered through their ranges) but have no federal or state status. Diablo helianthella occurs in scattered areas in the southeast portion of the site on steep slopes and ridges in forest and woodland openings and margins, and occasionally in the shaded forest understory. Robust monardella species occurs in widely scattered locations across the site along the margins of forest, woodland, and scrub habitats. Several plant species identified as regionally rare or unique by the local CNPS chapter also occur on the site including Oregon oak and Bolander's woodland star.

Though not observed during field surveys, several other special-status wildlife species are likely to occur in association with the creeks, floodplains, and/or hillslopes on the site including golden eagle (*Aquila chrysaetos*), white-tailed kite (*Elanus leucurus*), Cooper's hawk (*Accipiter cooperi*), loggerhead shrike (*Lanius ludovicianus*), and yellow warbler (*Dendroica petechia brewsteri*). Several target special-status wildlife species were determined to be unlikely to occur on the site following field surveys and habitat assessments including California tiger salamander, vernal pool fairy, tricolored blackbird (*Agelaius tricolor*), and western burrowing owl (*Athene cunicularia*).

4.2 Environmental Setting

This section of the report summarizes the environmental characteristics of the site as they relate to the occurrence and distribution of plant communities and associated wildlife and plant species on the site. The most important factors appear to be topography, geology/soils, and local climate.

4.2.1 Regional Geographic Overview

Fernandez Ranch is situated within the Franklin Hills (part of the East Bay Hills), in the heart of the 600-mile long Coast Range Geomorphic Province (Coast Range) of California. This province is one of the most dynamic physiographic regions in North America, and the East Bay Hills epitomize that dynamism. The deeply dissected ridges are the result of plate tectonics. Transpressional forces along the boundary of the North American and Pacific Plates produce folding and faulting, which for the past 1-2 million years have been thrusting the East Bay Hills upward. These hills continue to rise at a rate of approximately 1-2 millimeters per year (Sloan 2006). The ridges are dissected by parallel, mostly narrow valleys which have resulted from folding and associated active faults (at least 12 have been mapped in the region), as well as by a network of perennial and ephemeral streams that have cut though weaker soils.

4.2.2 Topography

Topography within and around the project site is dominated by steep northwest-trending Franklin Hills, which are typical of the East Bay Hills (Figures 2 and 3). Pinole Peak, which lies in the southwest corner of the project property, represents the highest point at 323 meters (1,059-ft) and is the highest point in northwestern Contra Costa County. Elevation decreases gradually along the primary ridge line that defines the site boundary to the northwest, and drops steeply (a maximum of 45% slope) on either side of the ridge. A second prominent ridge to the east runs northeast and then parallel to the highest ridge. This ridge decreases in elevation more gradually than the higher ridge, fanning out into a series of lower, rounded secondary ridges that comprise much of the eastern and central portions of the site.

The remainder of the project site is dominated by Rodeo Creek and its large tributary that cuts through the central hills of the site. Rodeo Creek is flanked on either side by a broad, flat floodplain terrace. Down-cutting of the creek has disconnected the creek channel from the historic floodplain. Predictably, the northern, downstream section of Rodeo Creek, at approximately 59 meters (197-ft), represents the lowest elevation within the project site.

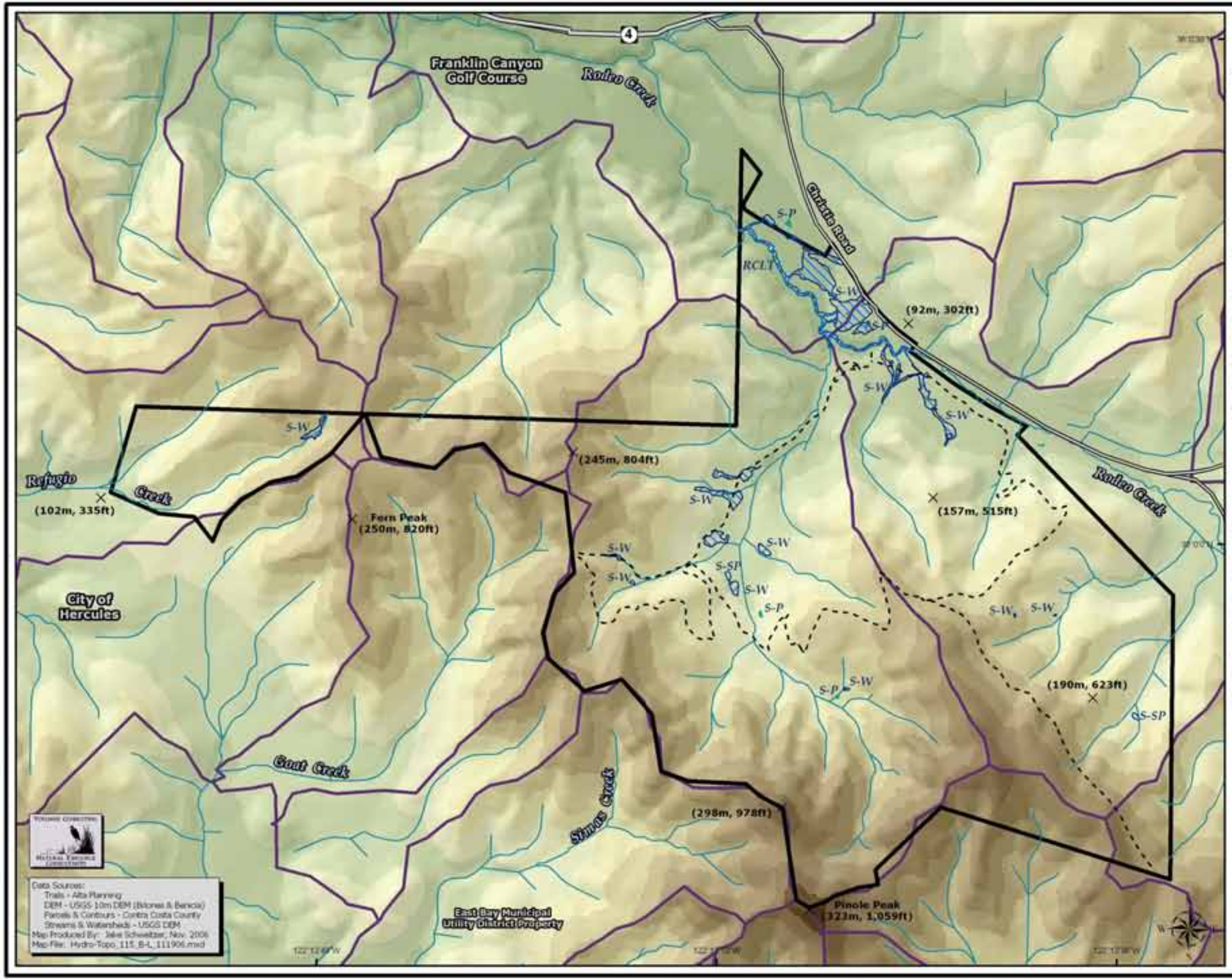
Figures 2 and 3 depict topography and slope, respectively, in and around the project site. These maps present processed versions of the USGS 10 meter grids. Statistics extracted from these grids yields a mean elevation of 160 meters (525-ft) and a mean slope of 17%.

4.2.3 Geology

The complex geologic formations of the Coastal Range can be categorized into three broad units based on their basement rock content: the Great Valley sequence along the eastern edge of the Range, the Salinian block west of the San Andreas Fault, and Franciscan assemblage in the middle (Irwin 1990). The project site lies within the Franciscan assemblage, near the border of the older Great Valley Sequence. The Franciscan assemblage is the most complex of the units (the term “mélange” is often used in describing the unit), and represents a transition zone between the predominantly marine-derived Salinian block and the continental Great Valley sequence. Uplands within the assemblage are predominantly made up of sedimentary rocks, but also include some metamorphic and basic igneous rocks. Various individual geologic formations have been identified and mapped with the Franciscan assemblage.

FIGURE 2
Project Area Hydrography and Topography

Fernandez Ranch
Muir Heritage Land Trust
Contra Costa County, California



Legend

Project Site Features
- Stream Network
- Watershed Sub-basin Boundary
- Rodeo Creek and Local Tributaries (RCLT)
- Seasonal Wetland (S-W)
- Seasonal Pool (S-P)
- Seasonal Stock Pond (S-SP)
- Fernandez Ranch Boundary
- Proposed Trails

Elevation Range (NGVD Meters)
- 300 - 350
- 275 - 300
- 250 - 275
- 225 - 250
- 200 - 225
- 175 - 200
- 150 - 175
- 125 - 150
- 100 - 125
- 75 - 100
- 50 - 75
- 25 - 50
- 0 - 25

Reference Features
- Highway
- Minor Road

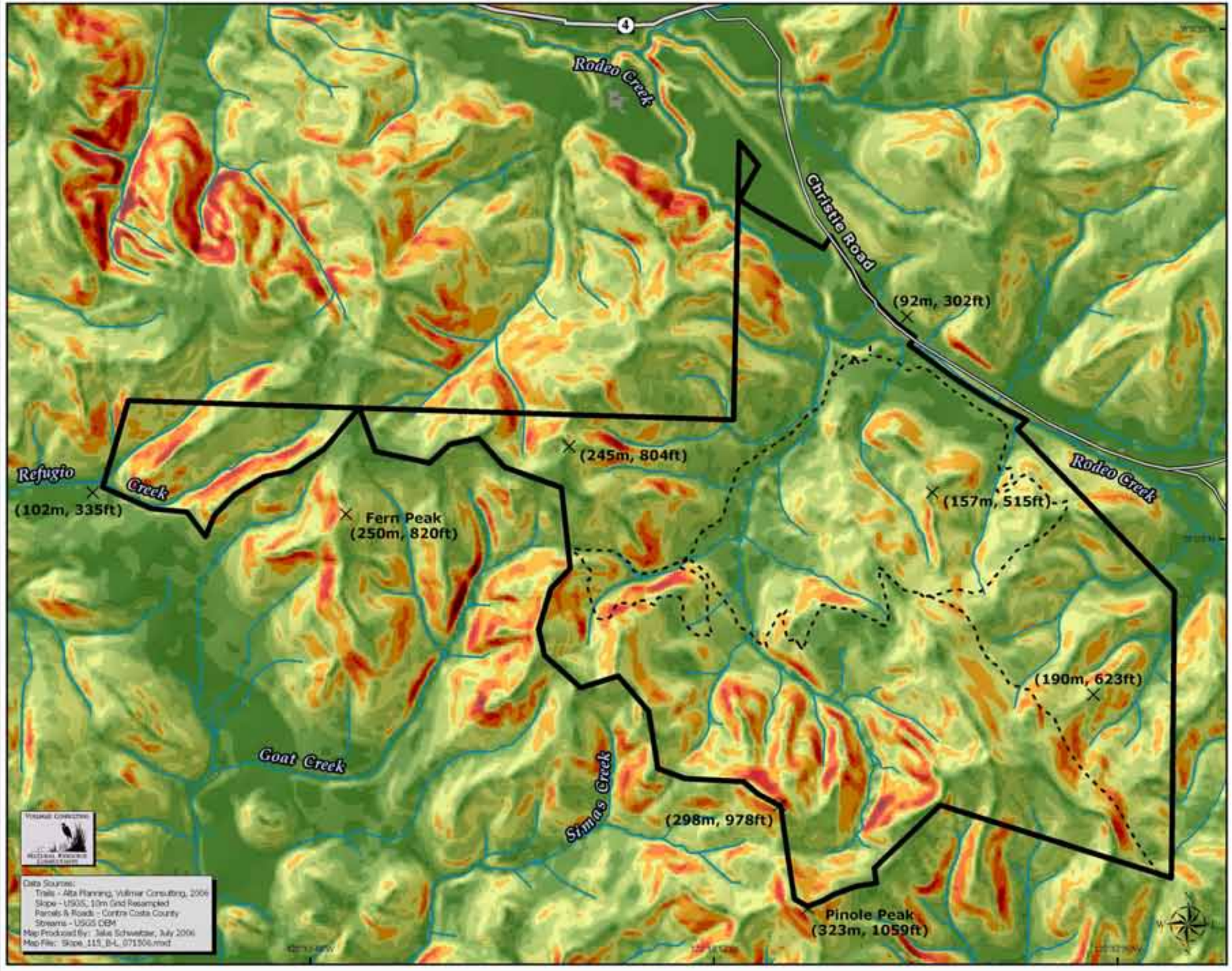
Acres
10
2.5

1:12,000
(1-in = 1,000-ft at tabloid layout)

0 125 250 500 Meters
0 250 500 1,000 1,500 2,000 Feet

FIGURE 3
Project Area Slopes and Topography

Fernandez Ranch
Muir Heritage Land Trust
Contra Costa County, California



Legend

Project Site Features
- Stream Network
- Proposed Trail Alignment
- Fernandez Ranch Boundary

Reference Features
- Highway
- Minor Road

Percent Slope
- 45 - 50%
- 40 - 45%
- 35 - 40%
- 30 - 35%
- 25 - 30%
- 20 - 25%
- 15 - 20%
- 10 - 15%
- 5 - 10%
- 0 - 5%

Acres
10
2.5

1:12,000
(1-in = 1,000-ft at tabloid layout)

0 125 250 500 Meters

0 250 500 1,000 1,500 2,000 Feet

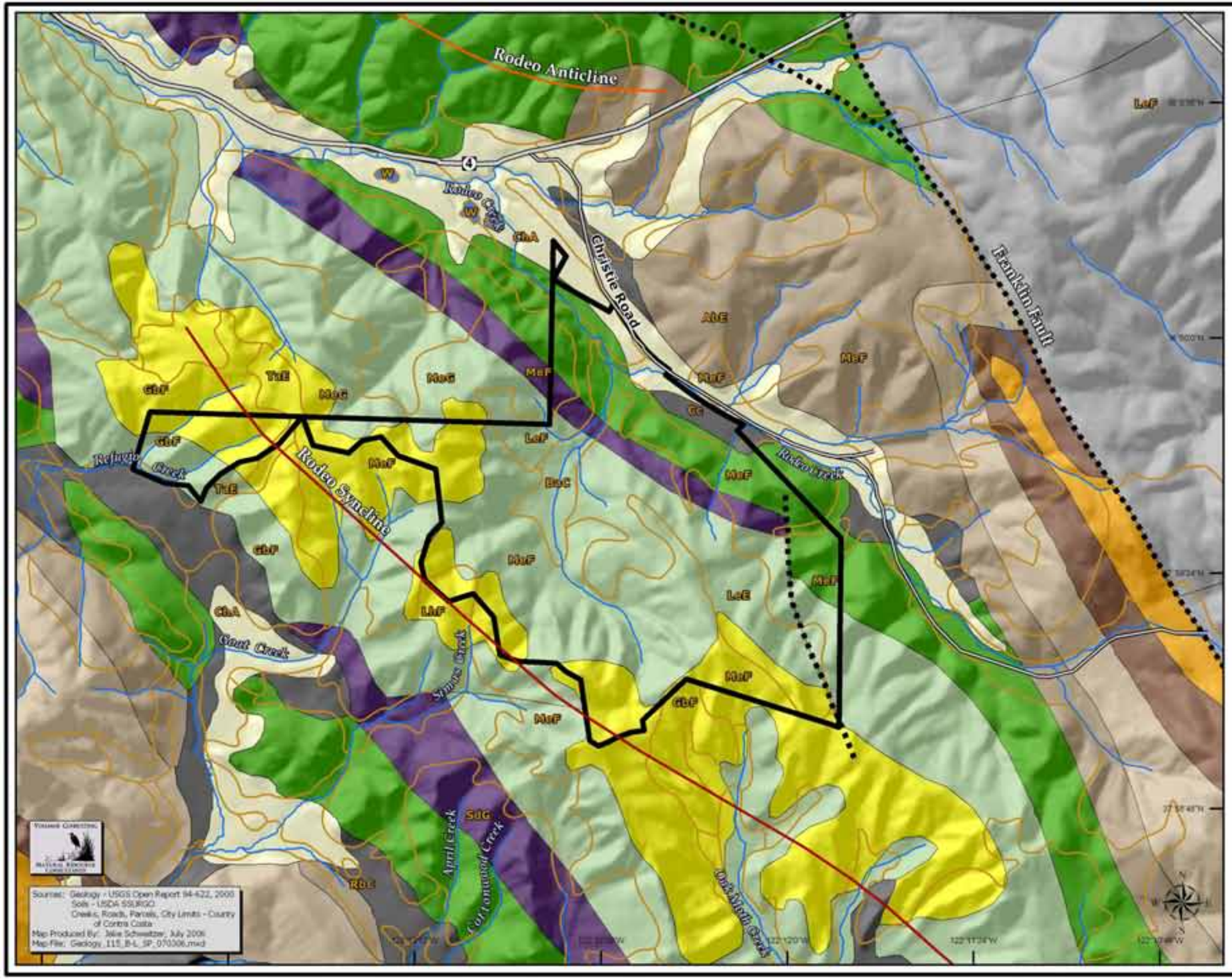
A total of six different geologic formations are mapped within the project site as summarized in Table 2 and shown in Figure 4 (from USGS 2000). Four of these formations – Lower Part of Briones Sandstone, Hercules Shale Member of the Briones Sandstone, Upper Part of the Briones Sandstone, and Neroly Sandstone –are derived from Tertiary/Miocene alluvial sediments laid down through the millennia as individual formations. The stratigraphic relationships of these formations are discussed in Table 2 and shown in Figure 4. The other two formations are recent formations composed of young alluvial deposits and sediments along present stream courses.

Table 2. Geologic Formations on the Fernandez Ranch Project Site, Contra Costa County, California.

Geologic Formation	Rock Type	Geologic Era	Period/ Epoch	Notes
Lower Briones Sandstone	Marine Sandstone (Sedimentary)	Cenozoic	Tertiary/ Miocene	Sandy claystone, mudstone, and siltstone, interbedded with fine-grained to very fine grained sandstone. Some hard calcite-cemented beds in sandstone. Occurs on lower slopes, adjacent to Rodeo Creek. Oldest formation on the site, stratigraphically below the Hercules Shale Member of the Briones Sandstone.
Hercules Shale Member of Briones Sandstone	Mudstone (Sedimentary)	Cenozoic	Tertiary/ Miocene	Mostly mudstone and firm subporcelaneous mudstone, some siltstone and very fine grained clayey sandstone in places.. Occurs on lower slopes above Rodeo creek, stratigraphically between the Lower and Upper Parts of the Briones Sandstone.
Upper Briones Sandstone	Marine Sandstone (Sedimentary)	Cenozoic	Tertiary/ Miocene	Resistant intervals of very fine grained to medium-grained sandstone and some finer grained rock between nonresistant intervals of interbedded siltstone, mudstone, very fine grained clayey sandstone, shale, and minor clean or silty sandstone beds. Occurs on mid to upper slopes stratigraphically between the Hercules Shale below and Neroly Sandstone above.
Neroly Sandstone	Marine Sandstone (Sedimentary)	Cenozoic	Tertiary/ Miocene	Medium- to coarse-grained sandstone interbedded with fine clayey sandstone and intervals of mudstone, siltstone, and shale. Occurs across the highest ridge on the site, on top of Lower Briones Sandstone.
Late Pleistocene Alluvium	Unconsolidated gravels, sands, and silts	Cenozoic	Quaternary/ Recent	These deposits are widespread in low-lying valleys and floodplains in the study area, especially to the east. They consist of unconsolidated alluvium (mostly granite) recently deposited along present stream courses. The floodplain terrace adjacent to Rodeo Creek
Undifferentiated, Upper Quaternary Deposits	Surficial deposits, undivided	Cenozoic	Quaternary/ Pleistocene-Holocene	These are current alluvial deposits along active stream channels and alluvial fans.

Source: USGS 1998.

FIGURE 4
Geologic Formations and Soil Types
Fernandez Ranch
Muir Heritage Land Trust
Contra Costa County, California



Legend

Geologic Formations

Quaternary
- Late Pleistocene Alluvium
- Undifferentiated, Upper Quaternary Deposits**

Tertiary
- Oursan Sandstone
- Neroly Sandstone
- Upper Part of Briones Sandstone
- Lower Part of Briones Sandstone
- Hambre Sandstone of Monterey Group
- Rodeo Shale of Monterey Group
- Tice Shale of Monterey Group
- Hercules Shale Member of Briones Sandstone

Cretaceous
- Undifferentiated Great Valley Sequence

Other Geologic Features
- Fault Line
- Anticline
- Syncline

Reference Features
- Project Boundary
- Water Body
- Soil Type Outline*
- Highway
- Minor Road

* See soils map for code definitions
** Includes colluvium between surficial deposits and hillside materials and mapped colluvium

Acres
20
5

1:18,000
(1-in = 1,500-ft at tabloid layout)

0 187.5 375 750 Meters

0 375 750 1,500 2,250 3,000 Feet

4.2.4 Soils

Table 3 summarizes the soils mapped on the site. Figure 5 shows the distribution of these soils on the site. The soils on the hillslopes are either loams or clay loams and are classified as non-prime agricultural soils. Many are rated as having a relatively high potential for landslides and for erosion when unvegetated. Approximately 80 percent of the project site is mapped as either Millsholm Loam (56%) or Los Gatos Loam (24%). Both of these are relatively thin soils (generally less than 20 inches deep) that overlay steep slopes composed of sandstone rock. Both soils have low-to-moderate shear strength and permeability. Such characteristics render these soils highly susceptible to erosion and slumping. Examples of such features are common throughout much of the site and are depicted in two photos in Appendix B. The potential for landslides and slumping was a major factor in preventing the proposed development of the Franklin Canyon property adjacent to the project site.

Lower portions of the site and areas adjacent to the larger streams are dominated by soils with a high clay content, namely Botella Clay Loam, Conejo Clay Loam, and Clear Lake Clay. Like the loamy soils up slope, these soils present low-to-moderate shear strength and are susceptible to erosion. Stream bank erosion is quite severe along several sections of Rodeo Creek and the large tributary that passes through the project site, and such erosion represents a major challenge to restoration ecologists involved in environmental planning for the site.

4.2.5 Climate

The climate in the local project region is strongly influenced by the topography of the East Bay Hills. The East Bay Hills effectively shelter the regions east of the hills from the full effects of maritime influences of the coast. While climatic differences are not extreme on either side of the hills, the San Francisco Bay region west of the hills is generally cooler in the summer and warmer in the winter relative to the Diablo Valley and Delta Regions east of the hills. The moderating influence of the maritime air is reflected in the July average temperature of 62°F in Richmond on the bay shore, compared to 74° in Antioch to the east of the hills (USDA 1977). The difference is reversed in the winter, when the eastern side of the hills is colder. Average annual precipitation ranges from 22.28 in Richmond to 13.34 inches in Antioch. Coastal fog plays a significant role along the coast and Bay regions during the late spring and summer and "tule" fog blankets inland valleys, often for days at a time during the winter.

The project site is situated within a transitional zone between the bay and inland climatic regimes. The nearest weather station to the project site, in Martinez, records temperature and precipitation averages that fall almost exactly in the middle of those for Richmond and Antioch. Martinez is east of the project site and thus more sheltered from maritime influences. Therefore, the project site likely leans closer to the coastal climatic regime than Martinez. However, given the high elevation of the ridge top along the western edge of the project, the site may actually lie within a slightly less maritime micro-climate relative to the local area. Indeed, it is plausible that the eastern portion of the site lies within its own micro-climate. A small stand of blue oaks, a species generally associated with the more extreme climate of inland valleys and foothills, grows only along the eastern edge of the project site.

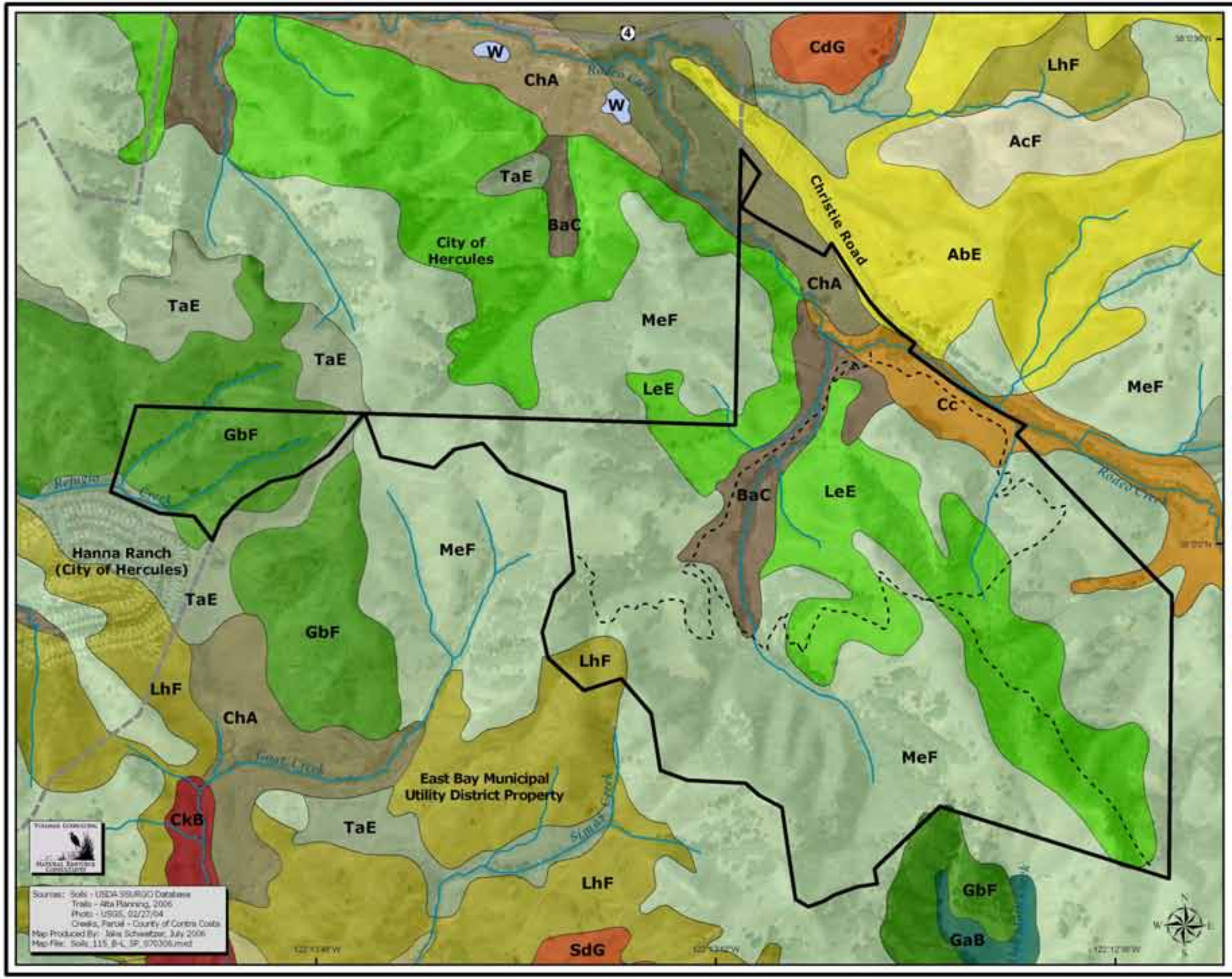
Table 3. Soil Types Found on the Fernandez Ranch Project Site, Contra Costa County, California.

Soil Type	Soil Order/Subgroup	Approximate Percent Cover of Site as Mapped	Notes
Millsholm Loam (MeF)	Inceptisols/Lithic Xerochrepts	56%	These are mineral soils that are beginning to develop altered horizons. Found in areas where there is sufficient moisture to remove bases, iron, or aluminum. They lack an illuvial horizon enriched by silicate clay. These are shallow, steep soils underlain by bedrock. Lack a horizon enriched by calcium carbonate.
Los Gatos Loam (LeE)	Mollisols/Typic Argixerolls	24 %	These are dark-colored mineral soils, most of which form under a cover of grass. The structure of their surface horizon is commonly granular or subangular blocky, and the horizon is soft or only slightly hard when dry. The soils are rich in bases. Moderately deep to deep and have a moderately thick, dark-colored surface horizon.
Gaviota Sandy Loam (GbF)	Entisols/Lithic Xerorthents	6%	These are mineral soils that show little or no evidence of pedogenic horizons, as generally too little time has passed for horizons to form. They are found on steep, actively eroding slopes or on flood plains. Generally less than 20 inches deep to hard rock. They are derived from siliceous sandstone and accumulate on sloping uplands over this hard sandstone.
Botella Clay Loam (BaC)	Marine Sandstone (Sedimentary)	6%	These are dark-colored mineral soils, most of which form under a cover of grass. The structure of their surface horizon is commonly granular or subangular blocky, and the horizon is soft or only slightly hard when dry. The soils are rich in bases. They have a thick, dark-colored surface horizon.
Clear Lake Clay (Cc)	Vertisols/Typic Pelloxererts	4%	These are clayey mineral soils that shrink and swell during all seasons and develop deep, wide cracks during dry periods.
Conejo Clay Loam, Clay Substratum (ChA)	Mollisols/Pachic Haploxerolls	2%	These are dark-colored mineral soils, most of which form under a cover of grass. The structure of their surface horizon is commonly granular or subangular blocky, and the horizon is soft or only slightly hard when dry. The soils are rich in bases.
Los Osos Clay Loam (LhF)	Mollisols/Typic Argixerolls	1%	These are dark-colored mineral soils, most of which form under a cover of grass. The structure of their surface horizon is commonly granular or subangular blocky, and the horizon is soft or only slightly hard when dry. The soils are rich in bases. They are deep to deep and have a moderately thick, dark-colored surface horizon.
Tierra Loam (TaE)	Surficial deposits, undivided	0.5%	These are mineral soils that are moist during part of the growing season. They have a clay-enriched B horizon that has translocated clays and moderate to high saturation of bases. They are generally well-drained soils that have a clayey Bt horizon with an abrupt upper boundary
Altamont Clay (AbE)	Vertisols/Typic Chromoxererts	0.2%	These are clayey mineral soils that shrink and swell during all seasons and develop deep, wide cracks during dry periods. Dark brown in surface horizon, generally because of accumulation of organic matter.

Source: USDA Soil Survey of Contra Costa County (1977)

FIGURE 5
Project Site Soils

Fernandez Ranch
Muir Heritage Land Trust
Contra Costa County, California



Legend

- Major Creek
- Proposed Trail Alignment
- Project Boundary

Clay Soils
- Altamont-Fontana Complex (AcF)
- Altamont Clay (AbE)
- Clear Lake Clay (Cc)
- Sehorn Clay (SdG)
- Cropley Clay (CkB)

Clay-Loam Soils
- Conejo Clay Loam (ChA)
- Rincon Clay Loam (RbC)
- Los Osos Clay Loam (LhF)
- Conejo Clay Loam, Clay Substratum (ChA)
- Botella Clay Loam (BaC)

Loam Soils
- Millsholm Loam (MeF)
- Gaviota Sandy Loam (GbF)
- Los Gatos Loam (LeE)
- Tierra Loam (TaE)
- Garretson Loam (GaB)

Water Body
- Water Body (W)

Acres
10
2.5

1:12,000
(1-in = 1,000-ft at tabloid layout)
0 125 250 500 Meters
0 250 500 1,000 1,500 2,000 Feet

4.2.6 Surface Hydrology

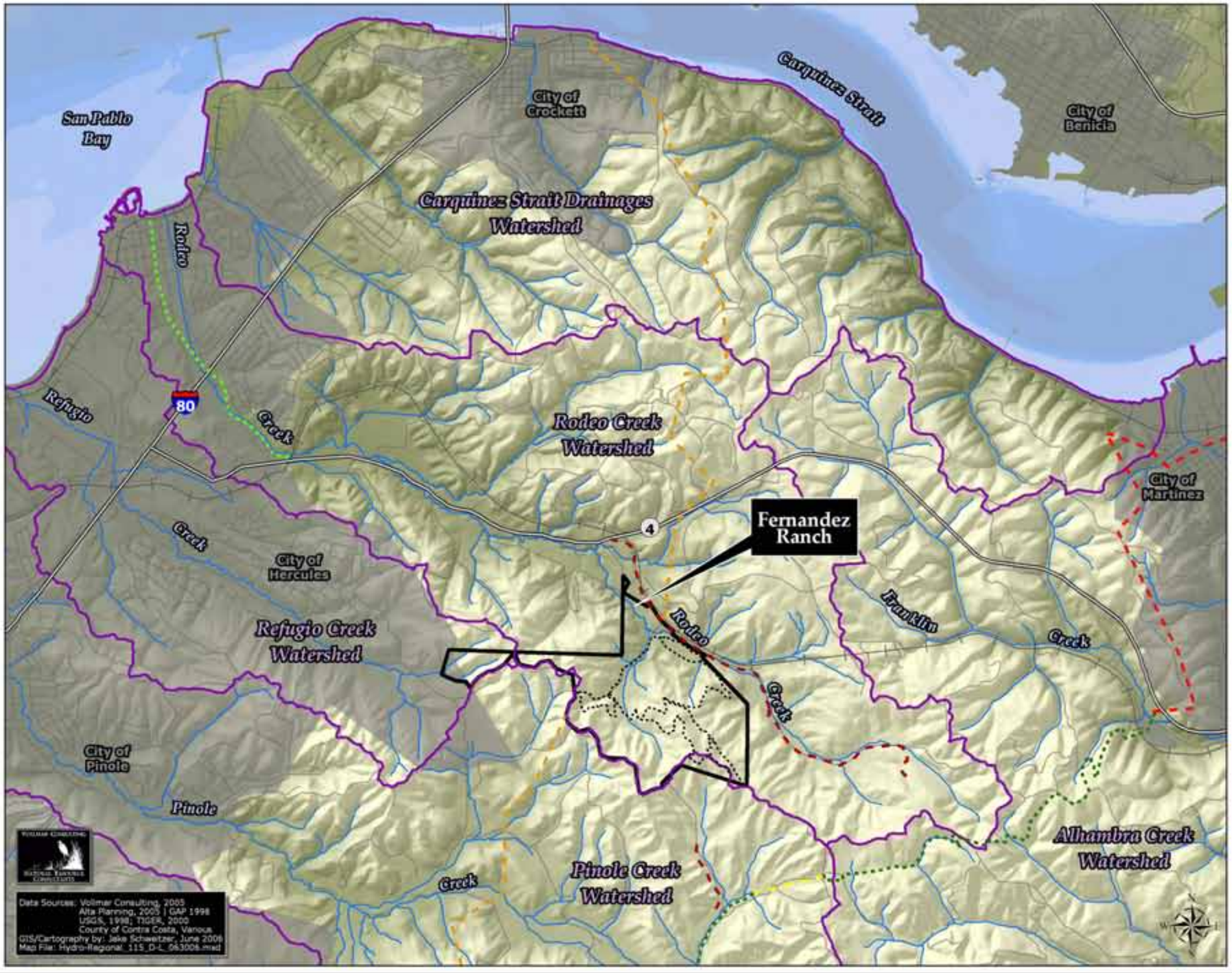
The project site lies within the Rodeo Creek watershed, approximately 2 miles downstream from the creek's headwaters. The Rodeo Creek watershed, which drains a large portion of the Franklin and Pinole Hills, is the largest watershed in northwestern Contra Costa County. It drains into San Pablo Bay, approximately 7 miles downstream, northeast of the project site (Figure 6). The far western portion of the site lies within the Refugio Creek watershed and encompasses the headwaters of the creek.

Rodeo Creek itself cuts through the northeastern portion of the project site, and an un-named major tributary dissects the northern half of the site, flowing northeast into the main channel. A number of smaller, mostly ephemeral creeks spring from the steep hills on the project site and flow into the larger tributary, or directly into Rodeo Creek. As Figure 2 shows, prominent ridges divide these creeks into a number of small watershed sub-basins within the project site. The project site supports a number of seasonal wetlands, seasonal pools, stock ponds, and other waters. These wetlands and their associated plant and wildlife species are discussed in depth in Section 5.0 below.

4.2.7 Land Use

Livestock grazing is the predominant land use on the site and has been for since the mid 1800s. Livestock grazing will continue into the foreseeable future but land use will be expanded to include natural resource conservation and restoration and recreational public access. Surrounding lands consists primarily of undeveloped lands used for livestock grazing. The nearest development is the Franklin Canyon Golf Course located northwest of the site. Figure 7 presents land use classification in the vicinity of the project site. The data shown on this map is derived from small-sources and provides only a general picture of land use in the region.

FIGURE 6
Regional Watersheds
Fernandez Ranch
Muir Heritage Land Trust
Contra Costa County, California



Legend

- Creek
- Watershed Boundary
- Proposed Trails

Regional Trails

- Existing Bay AreaRidgeTrail
- Existing EBMUD Trail
- Existing Rodeo CreekTrail
- Existing Contra Costa County Feeder 1
- Contra Costa County Feeder 1, Potential
- Contra Costa County Feeder 1, Easement
- Potential Bay Area Ridge Trail

Reference Features

- Highway
- Road
- Railroad
- Fernandez Ranch Boundary
- Urban Area

Elevation Range (NGVD Meters)

High : ~323 (Mt. Pinole, Fernandez Ranch)

Low : Sea Level

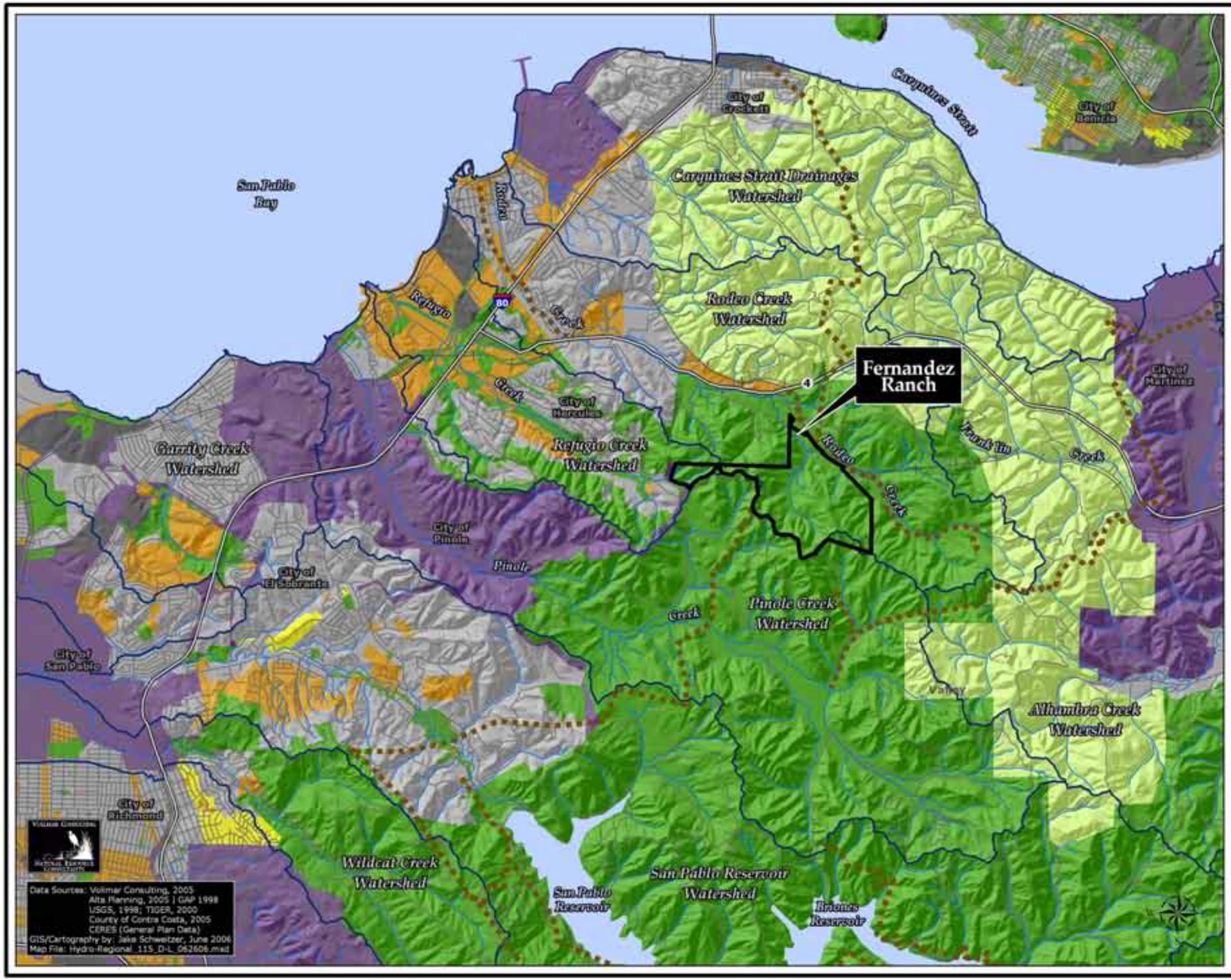
1:42,000 (at tabloid layout)

0 750 1,500 Meters

0 0.5 1 1.5 Miles

FIGURE 7
Regional General Plans (Existing and Planned Land Use)

Fernandez Ranch
Muir Heritage Land Trust
Contra Costa County, California



Data Sources: Volkmar Consulting, 2005
Alta Planning, 2005 | GAP 1998
USGS, 1998; TIGER, 2000
County of Contra Costa, 2005
CERES (General Plan Data)
GIS/Cartography by: Jake Schweitzer, June 2006
Map File: Hydro-Regional_11S_D-L_062606.mxd

Legend

Land Use General Plans
- Industrial
- Commercial
- Residential
- Urban Reserve
- Mixed Use
- Agriculture
- Open Space
- Water

Reference Features
- Highway
- Road
- Creek
- Regional Trail
- Railroad
- Watershed Boundary
- Fernandez Ranch Boundary

1:63,360
(1-in = 1-mile at tabloid layout)

0 1 2 Kilometers
0 0.5 1 1.5 2 Miles

4.3 Plant Communities

4.3.1 Plant Communities within the Project Site

Twenty-three different plant communities were identified and mapped on the site. These included one forest community, three woodland communities, six scrub communities, four grassland communities, three riparian communities, and four seasonal wetland communities. These communities are described based on dominant plant species. Table 4 provides a list of these plant communities, their dominant plant species, and their relationships to three different California plant community classification systems widely used (CDFG 2003, Sawyer Keeler Wolf 1995, and Holland 1986). Table 5 provides summary descriptions of these communities including dominant and subdominant plant species and their distribution on the project site. Figure 8 shows the mapped distribution of these communities on the site and Figure 9 presents associated special-status species on the project site. Appendix B presents representative photographs of many of these community types.

4.3.2 Sensitive Plant Communities

For the purposes of this report, sensitive plant communities include:

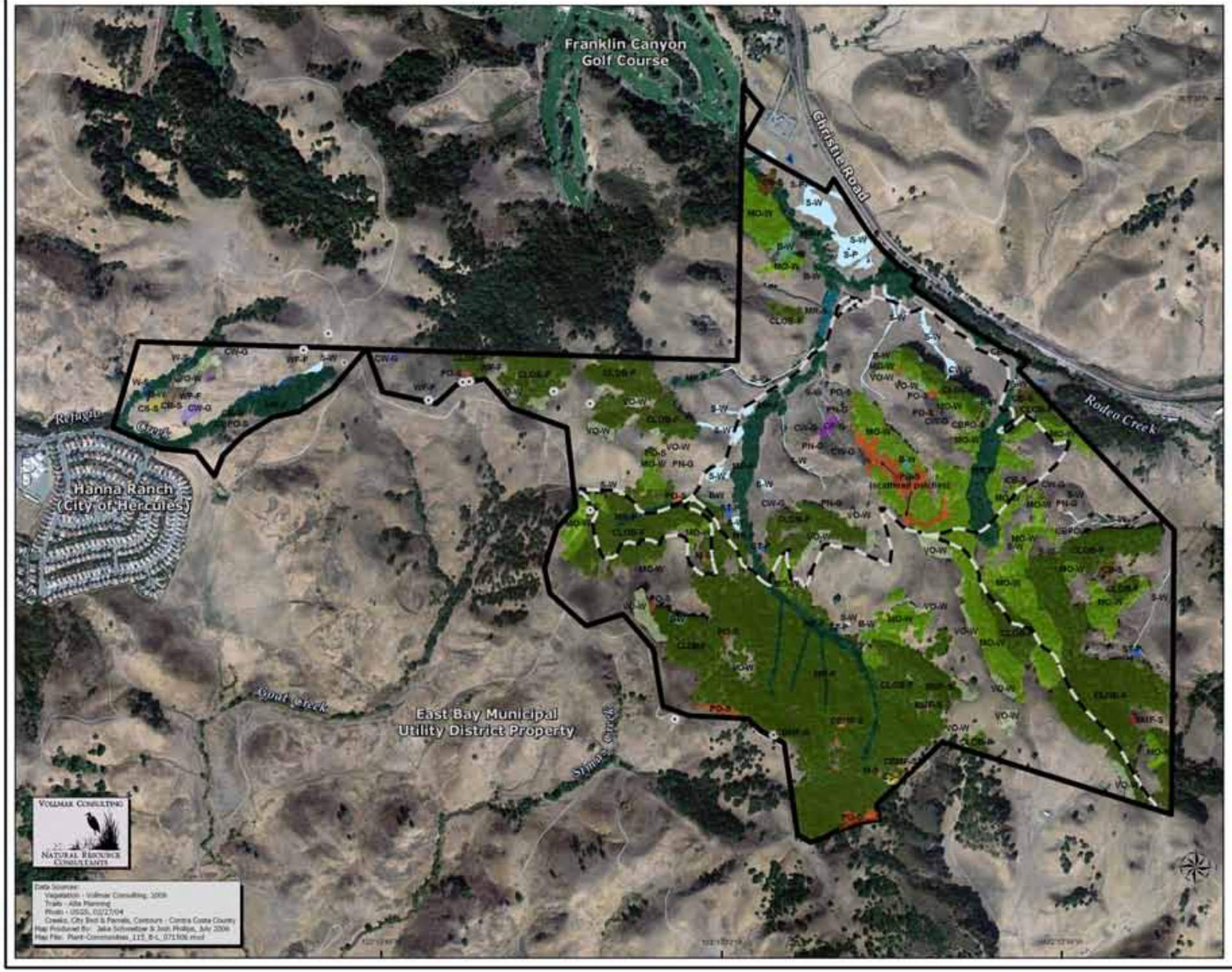
- Plant communities identified as "high priority for inventory" in the *List of California Natural Plant Communities Recognized by the California Natural Diversity Database* (CDFG 2003).
- Oak woodlands protected by the State Woodlands Preservation Act (Senate Bill 1334, Section 21083.4).
- Streambeds and riparian habitats subject to the jurisdiction of the CDFG (pursuant to Section 1602 of the California Fish and Game Code) and the ACOE (pursuant to Section 404 of the Clean Water Act), including seasonal wetlands, streambeds, and riparian habitats.

Several of the plant communities on the site are considered 'sensitive' habitats, including the oak woodlands, riparian habitats, and seasonal wetland habitats. Also included are native wildflower fields, native bunchgrasses, and coastal prairie, all of which lie within the extensive annual grasslands. These sensitive habitats are discussed below.

All of the oak woodlands are afforded protection under provisions of the recently enacted State Woodlands Preservation Act (Senate Bill 1334, Section 21083.4) and are considered to be sensitive plant communities. There are large stands of valley oaks on the project site along ridgelines and upper slopes which is very unusual for the species. Valley oaks typically occur on deeper alluvial soils in valley bottoms (hence the name 'valley' oak). The species' unusual distribution on the site may be explained by local climatic conditions or, possibly, hybridization with Oregon oak. Oregon oak, a regionally unique species according to the local chapter of the California Native Plant Society (CNPS), occurs sporadically in association with the valley oaks along the ridgelines and upper hillslopes. Valley oaks are distinguished from Oregon oaks by having smaller leaves and petioles, more truncate leaf lobes, less shiny, leathery leaf surfaces, acorn cups with tubercles rather than scales, and stellate hairs on the underside of the leaves with many as opposed to just a few rays.

While valley oaks constitute the large majority of the deciduous oaks on the site, there are perhaps a few dozen true Oregon oaks. Many of the "valley' oaks had some characteristics that were intermediate between valley oak and Oregon oak, usually leaf and petiole size. These characteristics were examined by the field biologists and two oak experts (Dr. John Tucker of U.C. Davis and Dr. Bruce Pavlik of Mills College). The project site lies near the southern and eastern edge of the Oregon oak range within the Coast Ranges, and thus is considered a CNPS regionally unique species.

FIGURE 8
Plant Communities
Fernandez Ranch
Muir Heritage Land Trust
Contra Costa County, California



Legend

Forest and Woodland Communities
- Coast Live Oak/Bay Forest (CLOB-F)
- Valley Oak Woodland (VO-W)
- Buckeye Woodland (B-W)
- Mixed Oak/Bay Woodland (MO-W)
- Mixed Riparian Forest (MR-F)

Riparian Scrub Communities
- Willow Scrub (W-S)
- Mixed Riparian Scrub (MR-S)

Scrub Communities
- Coyote Brush Scrub (CB-S)
- Coyote Brush-Poison Oak Scrub (CBPO-S)
- Poison Oak Scrub (PO-S)
- Chamise/Bush Monkey Flower Scrub (CBMF-S)
- Bush Monkey Flower Scrub (BMF-S)
- California Sagebrush Scrub (CS-S)
- Mixed Scrub (M-S)

Seasonal Wetlands, Pools and Stock Ponds
- Seasonal Wetland (S-W)
- Seasonal Stock Pond (ST-P)
- Seasonal Pool (S-P)

Grassland and Herbland Communities
- Coastal Prairie Grassland (CP-G)
- Creeping Wildrye Grassland (CW-G)
- Purple Needlegrass Grassland (PN-G)
- Wildflower Field (WF-F)

Other Features
- Proposed Trail Alignment
- Fernandez Ranch Boundary
- Rock Outcrop

Note: unlabeled areas are annual grassland

Acres
10
2.5

1:12,000 (B-Size) | 1:1,000 (D-Size)
(1-in = 1,000-ft at B-Size | 500-ft at D-Size)

0 125 250 500 Meters

0 250 500 1,000 1,500 2,000 Feet

Table 4. Plant Communities Identified on Fernandez Ranch.

Communities correlate with plant community classifications by California Department of Fish and Game (CDFG) (2003), Holland (1986), and Sawyer and Keeler-Wolf (1995). Information prepared by Vollmar Consulting, May 2006.

PLANT COMMUNITY TYPES MAPPED ON FERNANDEZ RANCH	DOMINANT/ SUBDOMINANT SPECIES	CDFG	HOLLAND	SAWYER/ KEELER-WOLF
FOREST COMMUNITIES				
Coast Live Oak/California Bay Forest*	Coast Live Oak-California Bay/ Poison Oak	California Bay-Coast Live Oak/Poison Oak- Hazelnut	Coast Live Oak Forest	Coast Live Oak Series
WOODLAND COMMUNITIES				
California Buckeye Woodland	California Buckeye/Coyote Brush	California Buckeye Woodland	Mixed North Slope Cismontane Woodland	California Buckeye Series
Mixed Oak/Bay Woodland*	Valley Oak-Black Oak-Coast Live Oak-California Bay	Mixed Oak-Valley Oak/ Poison Oak-California Coffeeberry Woodland	Coast Live Oak Woodland	Mixed Oak Series
Valley Oak Woodland*	Valley Oak/Annual Grasses	*Coast Live Oak-Valley Oak/Poison Oak Woodland	Valley Oak Woodland	Valley Oak Series
SCRUB COMMUNITIES				
California Sagebrush Scrub	California Sagebrush/ Annual Grasses	California Sagebrush Scrub	Coastal Scrub	California Sagebrush Series
Chamise/Bush Monkeyflower Scrub	Chamise-Bush Monkeyflower/Grasses	Chamise-Bush Monkeyflower	Chamise Chaparral	Chamise Series
Coyote Brush Scrub	Coyote Brush/Mugwort-Annual Grasses	Coyote Brush-Annual Grasses Scrub	Northern Coyote Brush Scrub	Coyote Brush Series
Coyote Brush/Poison Oak Scrub	Coyote Brush-Poison Oak/Mugwort-Grasses	Coyote Brush-Poison Oak Scrub	Northern Coyote Brush Scrub *and* Poison Oak Chaparral	Coyote Brush Series
Mixed Scrub	Coyote Brush-Poison Oak-Chamise-Bush Monkeyflower	Coyote Brush-Poison Oak Scrub	N. Coyote Brush Scrub *and* Poison Oak Chaparral	N/A
Poison Oak Scrub	Poison Oak/Annual Grasses	Poison Oak Scrub	Poison Oak Chaparral	N/A
GRASSLAND COMMUNITIES				
Coastal Prairie*	California Oatgrass-Western Rush-Creeping Wildrye	California Oatgrass Bunchgrass Grassland	Coastal Terrace Prairie	California Oatgrass Series

PLANT COMMUNITY TYPES MAPPED ON FERNANDEZ RANCH	DOMINANT/ SUBDOMINANT SPECIES	CDFG	HOLLAND	SAWYER/ KEELER-WOLF
Creeping Wildrye Grassland	Creeping Wildrye-Annual Grasses	Creeping Ryegrass Grassland	Valley Wildrye Grassland	Creeping Ryegrass Series
Non-Native Annual Grassland	Brome-Oat Grasses	Annual Brome Non-Native Grassland	Non-Native Grassland	California Annual Grassland Series
Purple Needlegrass Grassland*	Purple Needlegrass-Annual Grasses	Wild Oats-Purple Needlegrass Native Grassland	Valley Needlegrass Grassland	Purple Needlegrass Series
HERBLAND COMMUNITIES				
Bracken Fern Stand	Bracken Fern-Annual Grasses	Bracken Fern-Pale Hedge Nettle	Dry Montane Meadow	Montane Meadow Habitat
Wildflower Field*	California Poppies-Cream Cups-Lupines	California Annual Herb-Land	Wildflower Field	California Annual Grassland Series
RIPARIAN COMMUNITIES				
Mixed Riparian Forest*	California Bay-Coast Live Oak-Big Leaf Maple-Willows	Mixed Riparian Forest	Central Coast Live Oak Riparian Forest	Coast Live Oak Series
Mixed Riparian Scrub*	Willows-Coyote Brush-Poison Oak	North Coast Riparian Scrub	North Coast Riparian Scrub	Mixed Willow Series
Willow Riparian Scrub*	Willows/Manroot-Poison Oak	Willow Riparian Scrub	North Coast Riparian Scrub	Mixed Willow Series
SEASONAL WETLAND COMMUNITIES				
Seasonal Creek*	Rush-Seep Monkeyflower-Water Cress	Rush Riparian Grassland	N/A	N/A
Seasonal Stock Pond*	Rush-Cocklebur-Pale Spikerush/Brass Buttons	N/A	N/A	N/A
Seasonal Wetland*	Clustered Dock-Italian Ryegrass-Toad Rush	Freshwater Seep	Freshwater Seep	N/A
Seasonal Pool*	Hyssop Loosestrife-Rough-fruited Popcorn Flower-Slender Hairgrass	Vernal Pool	Vernal Pool	Vernal Pool

"*" denotes a "sensitive" plant community as defined in this report

Table 5. Descriptions of plant communities identified on the Fernandez Ranch Project Site.

Information prepared by Vollmar Consulting, May 2006.

PLANT COMMUNITY	DESCRIPTION	ON-SITE DISTRIBUTION	ASSOC. SPECIAL-STATUS SPECIES	ASSOC. NOXIOUS WEEDS
FOREST COMMUNTIES				
Coast Live Oak/ California Bay Forest*	Dense forest dominated by coast live oak and California bay trees creating an open shady, mesic understory of poison oak, snowberry, currant, manroot, sweetroot and miner's lettuce	Steep north to northeast facing hillslopes ending at stream corridors and grassland edges	SF dusky-footed woodrat; Cooper's hawk; robust coyote mint; Diablo helianthella	N/A
WOODLAND COMMUNITIES				
California Buckeye Woodland	Moderately dense woodland dominated by California buckeye trees with a shrubby, weedy understory of coyote brush, poison oak, hedge parsley and mugwort	Buffer between lower hillslope forests and grassland terraces	Alameda whipsnake; Cooper's hawk	N/A
Mixed Oak/California Bay Woodland*	Woodland of valley oak, black oak, blue oak, coast live oak, and California bay with 40-80% canopy cover creating an open mesic, shady understory of Italian thistle, hedge parsley, miner's lettuce and annual grasses	Moderately steep hillslopes on eastern portion of site	Alameda whipsnake; SF dusky-footed woodrat; Cooper's hawk; robust coyote mint; Diablo helianthella	Italian thistle
Valley Oak Woodland*	Woodland of valley oaks with a low canopy cover creating an open understory of non-native and native grasses and wildflowers including miniature lupine, California poppy, woodland star, and California buttercup	Edge of Coast Live Oak/California Bay Forest on hilltops, steep slopes and floodplain edges	Alameda whipsnake; Cooper's hawk; robust coyote mint	N/A
SCRUB COMMUNITIES				
California Sagebrush Scrub	Scrub community dominated by California sagebrush often surrounded by annual grasses and other shrubs including poison oak, coyote brush, chamise and bush monkeyflower	Dry, open hilltops of thin soil on eastern edge of site	Alameda whipsnake, Diablo helianthella; robust coyote mint	N/A
Chamise/Bush Monkeyflower Scrub	Scrub community dominated by chamise and bush monkeyflower often surrounded by annual grasses and other shrub species including poison oak, coyote brush and California sagebrush	Dry, open hilltops of thin soil on eastern edge of site	Alameda whipsnake; robust coyote mint; Diablo helianthella	N/A

PLANT COMMUNITY	DESCRIPTION	ON-SITE DISTRIBUTION	ASSOC. SPECIAL-STATUS SPECIES	ASSOC. NOXIOUS WEEDS
Coyote Brush Scrub	Scrub community dominated by tall, dense stands of coyote brush, often with a grassy and herbaceous understory of mugwort and Italian thistle in the mesic portions of the site, or a grassy, less herbaceous understory in the drier portions	Hillslopes, hilltops, forest edges, woodland edges, grassland edges	Alameda whipsnake; robust coyote mint; Diablo helianthella	Italian thistle; poison hemlock
Coyote Brush/ Poison Oak Scrub	Scrub community with coyote brush and poison oak as co-dominants, often as dense stands surrounded by Italian thistle in the mesic areas and annual grasses in the drier portions	Hillslopes, hilltops, forest edges, woodland edges, grassland edges	Alameda whipsnake; Diablo helianthella	Italian thistle; poison hemlock
Mixed Scrub	Scrub community comprised of poison oak, coyote brush, chamise, bush monkeyflower, California sagebrush, wild rose, blue elderberry and short-statured trees including coast live oak and buckeye as co-dominants often with a low, grassy understory and few forb species	Hillslopes, hilltops, forest edges, woodland edges, grassland edges	Alameda whipsnake; robust coyote mint; Diablo helianthella	N/A
Poison Oak Scrub	Scrub community dominated by tall, dense stands of poison oak, often with a grassy and herbaceous understory of mugwort and Italian thistle in the mesic portions of the site, or a grassy, less herbaceous understory in the drier portions	Hillslopes, hilltops, forest edges, woodland edges, grassland edges	Alameda whipsnake	Italian thistle; poison hemlock
GRASSLAND COMMUNITIES				
Coastal Prairie*	Scattered stands of native grasses and rushes including California oatgrass, creeping wildrye and western rush representing stands of coastal prairie	Moist, alluvial fans on north facing hillslopes spilling out onto grassland terraces	N/A	N/A
Creeping Wildrye Grassland	Dense stands of creeping wildrye without co-dominants and often surrounded by annual grasslands	Lower portions of moist hillslopes, often bordering seasonal creeks, wetlands or ponds	N/A	N/A

PLANT COMMUNITY	DESCRIPTION	ON-SITE DISTRIBUTION	ASSOC. SPECIAL-STATUS SPECIES	ASSOC. NOXIOUS WEEDS
Non-Native Annual Grassland	Contiguous grassland dominated by non-native annual grasses including many species of brome, barley, and Italian rye. Sections of grassland also include wildflower fields, native grass stands and patches of noxious weeds	Open hilltops, hillslopes, and terraces, often serving as the understory in woodlands	Alameda whipsnake; northern harrier; white-tailed kite; loggerhead shrike; golden eagle	Yellow star-thistle; Italian thistle
Purple Needlegrass Grassland*	Stands of purple needlegrass often existing within non-native annual grassland	Open hillslopes, hilltops and terraces	N/A	N/A
HERBLAND COMMUNITIES				
Bracken Fern Stand	Dense stands of short bracken fern within open grasslands, providing a low, shrub-like cover	Upper portions of exposed, dry steep hillslopes and hilltops with thin soils	Alameda whipsnake	N/A
Wildflower Field*	Fields of native and non-native wildflowers including California poppy, miniature lupine, sky lupine, checkerbloom, cream cups, fiddlenecks and blue dicks	Mesic hillslopes primarily in the western portion of the site	N/A	N/A
RIPARIAN COMMUNITIES				
Mixed Riparian Forest*	Mixed forest dominated by California bay and coast live oak and including California buckeye, big-leaf maple and willows creating a dense, overlapping canopy and a moist, shaded understory often dominated by riparian shrub and herb species.	Stream channel banks on hillslopes and terraces	California red-legged frog; SF dusky-footed woodrat; western pond turtle; Cooper's hawk	N/A
Mixed Riparian Scrub*	Dense scrub community comprised of many co-dominant species including arroyo willow, red willow, Scouler's willow, Gooding's willow, poison oak and coyote brush along open stretches of stream channel with little tree canopy cover. Riparian herbaceous understory consists of nettles, manroot, ferns and California blackberry	Stream channel banks without riparian forest cover within grassland terraces	California red-legged frog; SF dusky-footed woodrat; western pond turtle; Cooper's hawk	N/A
Willow Riparian Scrub*	Dense scrub community dominated by arroyo willow, red willow, Scouler's willow, and Gooding's willow along open stretches of stream channel. Understory species include manroot, poison oak, and nettles	Stream channel banks without riparian forest cover within grassland terraces	California red-legged frog; SF dusky-footed woodrat; western pond turtle; yellow warbler	N/A
WETLAND COMMUNITIES				

PLANT COMMUNITY	DESCRIPTION	ON-SITE DISTRIBUTION	ASSOC. SPECIAL-STATUS SPECIES	ASSOC. NOXIOUS WEEDS
Seasonal Creek*	Ephemeral drainage extending from hillslopes onto grassland terraces, bordered by wetland vegetation including seep monkeyflower and rushes	Numerous seasonal creeks within the site including Rodeo Creek, Refugio Creek and a few large tributaries and several smaller tributary creeks	California red-legged frog; western pond turtle	N/A
Stock Pond*	Man-made stock ponds developed as water supply for cattle. Currently, two intact ponds and three degraded ponds. Pond edges sustain a cover of wetland vegetation including brass buttons, rushes, chickweed, cockleburs and buttercups. One pond supports dense cattails.	Scattered throughout the site on hillslopes, often surrounded by a berm or steep bank	California red-legged frog; western pond turtle	N/A
Seasonal Wetland*	Seasonally filled depressions fed by groundwater (seep), rainwater or surface run-off , wetland species include cluster dock, Italian rye, common toad rush, seep monkeyflower, spikerush and brass buttons	Within Rodeo Creek floodplain terrace and other smaller floodplain terraces on the site. Often watered by small seasonal creeks flowing onto the terrace from adjacent hillslopes.	N/A	N/A
Seasonal Pool*	Seasonally filled depressions with a claypan bottom that fill during the rainy season and are dry by early summer, plants include hyssop loosestrife, rough-fruited popcorn flower, slender hairgrass, and other vernal pool –associated plant species	Located in scattered areas within seasonal wetlands on the Rodeo Creek floodplain terrace	N/A	N/A

Only a few blue oaks were found on the site, and these trees represent the westernmost extent of this species in the local region. This species is typically associated with drier, inland valleys and foothill regions. A few apparent hybrids between blue oaks and valley oaks were found on the site. California black oaks occur sporadically in mixed oak/bay woodlands on the site. Coast live oak, the only live (evergreen) oak on the site, occurs in dense forest stands along with California bay and mixed with deciduous oaks in more open woodlands on protected slopes. Together, these oaks form an interesting matrix of forest and woodland communities, significant in their oak species diversity, richness, and hybridization.

The introduced annual grasslands on the site generally have a fairly heavy cover of introduced annual grass species as well as interspersed weed patches. These aggressive weeds limit the abundance of native wildflowers, native bunchgrasses, and native coastal prairie species, but there are scattered occurrences of these native species within the annual grasslands. The larger stands were mapped and are presented on Figure 8. Native wildflower fields, native bunchgrass stands, and coastal prairie stands are considered 'sensitive' habitats by CDFG and may require consideration under CEQA. The mapped native wildflower fields are all concentrated in the far western portion of the site, perhaps due to differences in local soil conditions. The wildflower fields in most locations are dominated by California poppy (*Eschscholtzia californica*), cream cups (*Platystemon californicus*), and lupines (*Lupinus* spp.) are concentrated on steep, thin-soiled hillslopes such as those above Refugio Creek. This area appears to have been ungrazed for several years which may have diminished the cover and extent of native wildflowers due to competitive exclusion from weeds and non-native grasses. Prescribed grazing would likely improve the habitat for native wildflowers. Purple needlegrass, a native perennial bunchgrass, was mapped in three localized areas on the site. This species is generally absent from annual grasslands on the project site. The three localized occurrences are associated with seasonally moist soils with a slightly higher clay content than surrounding areas. Coastal prairie was mapped in two localized stands, identified by the occurrence of California oatgrass and western rush. The cover of these species was fairly low within the mapped stands (combined cover less than 10%), indicating that the coastal prairie habitat is marginal. Italian ryegrass, a common introduced annual grass species on the site, was the dominant species within these stands. Nonetheless, these stands represent a unique and uncommon botanical resource on the site. Coastal prairie is most common in more coastal areas and its occurrence here represents the most inland stand documented in the region. The coastal prairie stands on the site were associated with seasonally wet alluvial fan soils near the base of small seasonal creeks.

Woody riparian habitats occur in dense stands along the larger creeks and in intermittent stands along most of the smaller creeks. All riparian habitats and their associated stream corridors are considered 'sensitive' habitats and are regulated as streambeds under Section 1602 of the State Fish and Game Code. They are also regulated as CDFG-designated sensitive habitats and by a Contra Costa County riparian protection ordinance. The riparian habitats identified on the site include mixed riparian forest dominated by a dense cover of coast live oak and California bay, mixed riparian scrub dominated by a mix of willows and riparian shrubs (including poison oak and coyote brush), and willow riparian scrub dominated by a willows. Figure 8 shows the distribution of these riparian habitats mapped on the site. The riparian corridors were easy to delineate where they were bordered by grassland, scrub, or open woodlands. In dense coast live oak/bay forest, the transition from riparian to upland forest habitat was more difficult to delineate since both the upland forest and riparian forest was dominated by coast live oak and California bay. The riparian forest was distinguished based on its proximity to a creek channel and the occurrence of other associated riparian trees and shrubs that did not occur in the upland forest, such as big-leaf maple (*Acer macrophyllum*) and willows.

Seasonal wetlands occur within some of the creek channels, in low-lying areas on the Rodeo Creek

floodplain terrace and other terraces, and within several man-made stock ponds on the site. All of these wetlands will most likely be considered jurisdictional, subject to regulation under Section 404 of the Clean Water Act. Many of the deeply shaded creeks within coast live oak/bay forest had minimal herbaceous wetland vegetation and would be considered 'other waters' rather than wetlands under Section 404. Four different seasonal wetland types were identified and mapped on the site, including seasonal creeks within defined creek channels; seasonal wetlands within swales and low-lying areas on floodplain terraces subject to seasonal saturation but having no eroded bed or bank; seasonal pools consisting of ponded depressions within some of the seasonal wetlands on the Rodeo Creek terrace; and man-made stock ponds. Figures 2 and 8 depict the distribution of these wetlands on the site.

4.4 Special-Status Species

Table 6 is a list of special-status wildlife and plant species known or with potential to occur on the site based on regional occurrence and site surveys and habitat assessments. Sources used to develop this list include the CDFG's California Natural Diversity Data Base (2006), CNPS's Online Inventory Rare and Endangered Vascular Plants of California (CNPS 2006), and information provided by regional expert biologists. The table includes listing status and preferred habitat. The right-hand column indicates those species that have been observed, those that have not been observed but have potential to occur, and those that are not expected to occur. Appendix A provides lists of all wildlife and plant species observed on the site during the 2006 field surveys.

4.4.1 Special-Status Wildlife

Table 6 identifies 16 locally occurring special-status wildlife species that are associated with the habitat types present on Fernandez Ranch. Five of these species were observed on the site during field surveys conducted for this project, including California red-legged frog, western pond turtle, northern harrier, San Francisco dusky-footed woodrat, and American badger. Alameda whipsnake, while not documented, is presumed to occur based on the presence of high quality habitat on the site as well as a documented occurrence on the Franklin Canyon property less than a tenth of a mile northwest of the site, and the fact that the site is wholly within formerly designated critical habitat for the species (the designation was vacated by a court decision).

Though not observed during field surveys, six other species were determined to have potential to occur on the site based on the presence of suitable habitat. These include Cooper's hawk, golden eagle, white-tailed kite, loggerhead shrike, yellow warbler, and pallid pat (*Antrozous pallidus*).

The remaining four species in Table 6 are not expected to occur based on a lack of suitable habitat and the results of site assessments. These include vernal pool fairy shrimp, California tiger salamander, tricolored blackbird, and western burrowing owl.

All of the species known or with potential to occur on the site are discussed individually below. Species not expected to occur are not further discussed in this document.

Table 6. Special-Status Wildlife and Plant Species Known or with Potential to Occur on the Fernandez Ranch Project Site, Northern Contra Costa County, California.

Common/Scientific Name	Status	Preferred Habitat(s)	Occurrence On Site
Invertebrates			
Vernal pool fairy shrimp (*Branchinecta lynchi*)	FT	Vernal pools and other seasonal pools with sparse vegetation	Not Expected: The seasonal pools on the site generally do not remain inundated for the minimum two week period
Amphibians			
California tiger salamander (*Ambystoma californiense*)	FT CSC	Grasslands and lowest foothill regions; breeds in long-lasting rain pools.	Not Expected: The site is outside of the known range of the species (USFWS 2005); not encountered during aquatic inventory surveys.
California red-legged frog (*Rana draytonii*)	FT CSC	Water sources such as ponds, lakes, reservoirs, streams and adjacent riparian woodlands.	***Observed****:* The species has been documented within a stock pond in the south-central portion of the site; and within Rodeo and Refugio Creeks.
Reptiles			
Western pond turtle (*Clemmys marmorata*)	CSC	Aquatic habitats including ponds, streams, and irrigation ditches, with appropriate basking sites.	***Observed:*** An individual pond turtle was observed onsite within the creek zone; known to occur within Rodeo Creek.
Alameda whipsnake (*Masticophis lateralis euryxanthus*)	FT CT	Chaparral, scrub, grassland, and oak woodland habitats.	***Presumed to Occur****:* Suitable habitat present and known to occur adjacent to the site.
Birds			
Cooper's hawk (*Accipiter cooperi*)	CSC	Nests in dense, mixed forests along creeks.	*Potential*: Suitable nesting and foraging habitat present; an inactive nest believed to belong to this species was observed on the site (Stromberg pers. comm.).
Tricolored blackbird (*Agelaius tricolor*)	BCC CSC	Nests in freshwater marshes and riparian scrub.	Not Expected: Marginal habitat present due to limited extent of riparian scrub and emergent vegetation.
Western burrowing owl (*Athene cunicularia*)	BCC CSC	Forages and nests in grasslands and open scrub with small mammal burrows.	Not Expected: Potential burrow sites are limited as no ground squirrel burrows were observed.

Common/Scientific Name	Status	Preferred Habitat(s)	Occurrence On Site
Golden eagle (*Aquila chrysaetos*)	BCC CSC CFP	Nests on cliff-walled canyons and large trees in open areas.	*Potential*: Suitable nesting and foraging habitat present; not observed on site but known to nest in the area.
Northern harrier (*Circus cyaneus*)	CSC	Open grasslands, meadows, and emergent wetlands, where it nests on the ground in shrubby vegetation.	***Observed**:* Individuals observed foraging on the site; limited nesting habitat present.
Yellow warbler (*Dendroica petechia brewsteri*)	CSC	Nests in riparian areas.	*Potential:* Suitable nesting and foraging habitat present; not observed on the site but known to nest in the area.
White-tailed kite (*Elanus leucurus*)	CFP	Nests in trees, often in isolated stands, surrounded by open foraging habitat.	*Potential*: Suitable nesting and foraging habitat present; not observed on the site but known to nest in the area.
Loggerhead shrike (*Lanius ludovicianus*)	BCC CSC	Grasslands with scattered shrubs, trees, fences or other perches.	*Potential*: Suitable nesting and foraging habitat present; not observed on the site but known to nest in the area.
Mammals			
Pallid bat (*Antrozous pallidus*)	CSC	Associated with oak woodland, yellow pine, redwood, and giant sequoia habitats; relies heavily on trees for roosts.	*Potential*: Suitable roosting and foraging habitat present.
San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*)	CSC	Builds nest within a variety of woodland habitats.	***Observed*:** Several nests (i.e., stick houses) occur within the onsite woodlands.
American badger *(Taxidea taxus*)	CSC	Drier open stages of shrub, forest and herbaceous habitats with friable soils.	***Observed**:* An individual badger was observed on the site.
Plants			
Large-flowered fiddleneck (*Amsinckia grandiflora*)	FE, CE	Grassy slopes	Not Expected: Currently known from less than six occurrences in eastern Alameda and Contra counties and southwest San Joaquin County.
Bent-flowered fiddleneck (*Amsinckia lunaris*)	CNPS List 1B	Open woodland and grasslands	*Potential:* Known occurrences in the general project vicinity. Grasslands provide suitable habitat.

Common/Scientific Name	Status	Preferred Habitat(s)	Occurrence On Site
Big tarplant (*Blepharizonia plumosa*)	CNPS List 1B	Dry grassy areas	*Potential:* Known occurrences in the general project vicinity. Grasslands provide suitable habitat.
Mount Diablo fairy lantern (*Calochortus pulchellus*)	CNPS List 1B	Wooded slopes, chaparral, protected grassland slopes	*Potential:* Known occurrences in the general project vicinity. Woodlands grassland, and scrub habitats on site provide potential habitat
California larkspur (*Delphinium californicum* ssp. *interius*)	CNPS List 1B	Chaparral, scrub	Not Expected: Closest known occurrences are several miles to the east of the site, associated with chaparral and scrub which is very limited on the site
Western leatherwood (*Dirca occidentalis*)	CNPS List 1B	Forest, riparian scrub	*Potential:* Known from sites to the south in the Briones Hills in riparian and forest habitat similar to that on the site.
Round-leaved filaree (*Erodium macrophyllum*)	CNPS 2	Grassland scrub on friable clay soils	Not Expected: Typically occurs n a very unique, friable clay soil type that was not found on the site.
Fragrant fritillary (*Fritillaria liliacea*)	CNPS List 1B	Heavy soil, open hills and fields near coast	Not Expected: Typically associated with heavy clay soils which do not occur on the site.
Diablo helianthella (*Helianthella castanea*)	CNPS List 1B	Shaded to protected grassy slopes, and woodland and scrub margins and openings.	***Observed:*** Scattered clusters on steep, dry slopes in the southeastern portion of the site. Occurrences are along the margins and understories of oak woodlands and oak-bay forest, often in the vicinity of scrub habitat with bush monkeyflower (*Mimulus aurantiacus*).
Contra Costa goldfields (*Lasthenia conjugens*)	FE	Vernal pools	*Potential:* Known from vernal pools on the Rodeo Creek floodplain terrace less than ½ mile downstream from the site. Seasonal pools on the Rodeo Creek floodplain terrace provide potential habitat.
Bolander's woodland star (*Lithophragma bolanderi*)	CNPS Locally Rare	Protected grasslands	***Observed:*** Three localized occurrences found within protected grasslands adjacent to scrub and riparian habitats.
Showy madia (*Madia radiate*)	CNPS List 1B	Grassy slopes	Not likely: Grasslands provide potential habitat but known occurrences are east of the site along the interior Coast Ranges.
Oregon meconella (*Meconella oregano*)	CNPS List 1B	Grassland; Misc. habitats	Not expected: Known from fewer than 5 occurences in California, three of which are associated with coastal scrub habitat in western Contra Costa County. Coastal scrub is not present on the site.

Common/Scientific Name	Status	Preferred Habitat(s)	Occurrence On Site
Robust coyote-mint (*Monardella villosa* ssp. *globosa*)	CNPS List 1B	Grassy slopes along forest, woodland, and scrub margins.	***Observed:*** Widely scattered individuals found throughout the hills on the project site. *Monardella villosa* is a highly variable taxa. Most plants had the larger features, characteristic of *M. v.* ssp. *globosa*. Plants with characteristics of *M. v.* ssp. *villosa* also identified.
Oregon oak (*Quercus garryana* ssp. *garryana*)	CNPS Locally Rare	Open slopes with grassland understory	***Observed:*** Scattered Oregon oaks occur on ridges and upper slopes on the site, in association with Valley oak woodland and mixed oak/California bay woodland
Scouler's willow (*Salix scouleriana*)	CNPS Locally Rare	Riparian scrub and woodland	***Observed:*** Scattered Scouler's willows identified along Rodeo Creek and other creeks on the site.
Caper-fruited tropidocarpum (*Tropidocarpum capparideum*)	CNPS List 1A	Alkaline soils, low hills, valleys	Not Expected: Currently presumed extirpated in the Central California. Historic occurrences in eastern Contra Costa County. Grasslands on the site provide potential habitat but species is unlikely to occur.
Dobiepod (*Tropidicarpum gracile*)	CNPS Locally Rare	Grasslands	***Observed:*** One localized occurrence found within annual grasslands on the site.

STATUS KEY:

FE: Federally Endangered
FT: Federally Threatened
BCC: Bird of Conservation Concern
CE: California Endangered
CT: California Threatened
CFP: California Fully Protected
CSC: California Species of Special Concern

CNPS List 1B: Rare and endangered in California and elsewhere
CNPS List 2: Rare in California, more common elsewhere
CNPS List 3: Species about which More Information is Needed
CNPS List 4: Watch List

California Red-Legged Frog (*Rana draytonii*)

Federally Threatened, California Species of Special Concern

Background

The California red-legged frog is a medium-sized native frog, typically 4-5 inches in length when mature. As indicated by its name, the hind legs as well as the abdomen of adults are reddish in color. CRLF is federally-listed as threatened and is a state species of special concern, in recognition of its dramatic and continuing extirpation throughout most of its historic range. USFWS has completed a recovery plan for the species (USFWS 2002). Critical habitat has been proposed but not yet established. Nearby Briones Regional Park is within proposed designated critical habitat, but the Fernandez Ranch site is not (USFWS 2002).

CRLF historically ranged from Marin County along the coast and from Shasta County inland southward to Baja California, Mexico (Hayes and Jennings 1994). Within this region, it occurred throughout the Coast Ranges, Central Valley, and western Sierra Nevada foothills up to about 1,500 meters (5,200 feet) in elevation. Historically, it was the most abundant native California frog, common enough that it was harvested by early Californians (Hayes and Jennings 1986) (which may have contributed to its initial decline). This frog was also the subject of Mark Twain's short story 'The Celebrated Jumping Frog of Calaveras County' published in 1867. Over the past 200 years, CRLF's range has been greatly reduced (and continues to be reduced), with most remaining populations occurring in the Coast Ranges from Marin to Ventura County. CRLF is believed to be extirpated from the floor of the Central Valley. A few small isolated populations still occur in the Sierra Nevada foothills. The loss of range is due to a combination of initial harvesting of the species for food, loss and degradation of breeding habitat, and competition/predation by introduced predatory species such as the bullfrog (Hayes and Jennings 1986).

CRLF breed in streams, deep pools, backwaters within streams and creeks, ponds, marshes, sag ponds, dune ponds, lagoons, and stock ponds. Breeding adults are often associated with deep (greater than 0.7 meter [2 feet]) stagnant or slow moving water, as well as with dense, shrubby riparian or emergent vegetation (Hayes and Jennings 1988). The frogs have however been observed in shallow sections of streams and ponds that are devoid of vegetative cover. Breeding typically begins between November and mid-December and lasts through April in most years, but is dictated by winter rainfall (Stebbins 2003, Jennings and Hayes 1994, Bulger et al. 2003). Females deposit egg masses on emergent vegetation (Jennings and Hayes 1994). Larvae hatch in 6-14 days and metamorphosis is completed in 4-5 months (Jennings and Hayes 1994). Males and females attain sexual maturity at 2 and 3 years, respectively (Jennings and Hayes 1994). In some cases, tadpoles over-winter and metamorphose the following spring.

CRLF utilize non-aquatic habitats for refuge, dispersal, and foraging. The species is known to rest and feed in riparian vegetation, and it is believed that the moisture and cover of the riparian zone provides foraging habitat and facilitates dispersal. Accessibility to sheltering habitat is essential for CRLF survival within a watershed, and can be a factor limiting frog population numbers. Sheltering habitat includes mammal burrows, damp leaf litter, downed wood, other cover objects, riparian vegetation, and dense shrubbery within several hundred meters of aquatic sites. CRLF may shelter further than 100 m (328 ft) from water in such places for weeks at a time in any season (USFWS 2002).

During winter rains, adult CRLF are known to traverse up to 3 km (1.9 miles) from aquatic sites (USFWS 2002). They can disperse across grasslands, woodlands, coniferous forests, and chaparral. CRLF have been observed to make long distance migrations that are straight line movements, without apparent regard to topography, vegetation type, or riparian corridors (USFWS 2002). However, the moisture and cover of riparian habitat may facilitate dispersal. The healthiest California red-legged frog populations persist as a

collection of subpopulations that exchange genetic material through dispersal events among a set of habitable ponds and other water bodies. Studies have shown that the probability of a habitat being occupied by CRLF is positively correlated with the distance to the nearest occupied habitat (USFWS 2002). Maximum practical dispersal distance between ponds is less than 1.6 km (1 mile) though CRLF can travel up to 3.2 km (2 miles).

Occurrence On and Adjacent to the Site

The CNDDB contains a record of CRLF from a stock pond located approximately 0.10 mile south of the western panhandle Fernandez Ranch project boundary. This pond, which is located on East Bay Municipal Utility District (EBMUD) property, is located between Refugio Creek and Goat Creek. The CNDDB also contains a record of CRLF from the portion of Rodeo Creek on the Franklin Canyon Golf Course, located approximately 0.60 mile northwest of the northern Fernandez Ranch boundary.

In June 2006, Josh Phillips and John Vollmar of Vollmar Consulting observed three adults CRLFs during night spotlight surveys within the largest stock pond on the site (located in the south-central region of the site, see Figure 9). The pond is located adjacent to a tributary and associated riparian corridor of Rodeo Creek. It is watered by runoff from a small seasonal creek or seep and thus remains inundated well into summer (perhaps into the fall). While the pond appears to provide suitable breeding habitat, further studies would be required to determine the function(s) the pond serves in the life history of the local CRLF population. Eggs mass surveys were conducted in early January 2006 by Mr. Vollmar and CRLF expert Mark Allaback in this and other ponds on the site as well as portions of Rodeo Creek. No CRLF egg masses were found. At the time of the survey, Mr. Allaback concluded that the ponds and creeks on the site did not provide high-quality breeding habitat for CRLF (Allaback pers. comm.). Surveys for CRLF tadpoles were conducted incidentally during visual and dip-net surveys conducted March-May to characterize the pond and creek aquatic invertebrate communities. These surveys confirmed breeding by California newts and Pacific chorus frogs in both the larger ponds and creeks. No other amphibian larvae were found. A few juvenile bullfrogs were observed in Rodeo Creek but there is no evidence of breeding on the site by this species. Given the lack of any evidence of CRLF breeding on the site, it is likely that CRLF either doesn't currently breed on the site or breeds only sporadically during favorable rain years. CRLF undoubtedly uses the site for shelter and dispersal, preferring the larger creeks and stock ponds. CRLF also likely use the uplands for movement between suitable breeding and sheltering sites on adjacent properties.

Alameda Whipsnake (*Masticophis lateralis euryxanthus*)

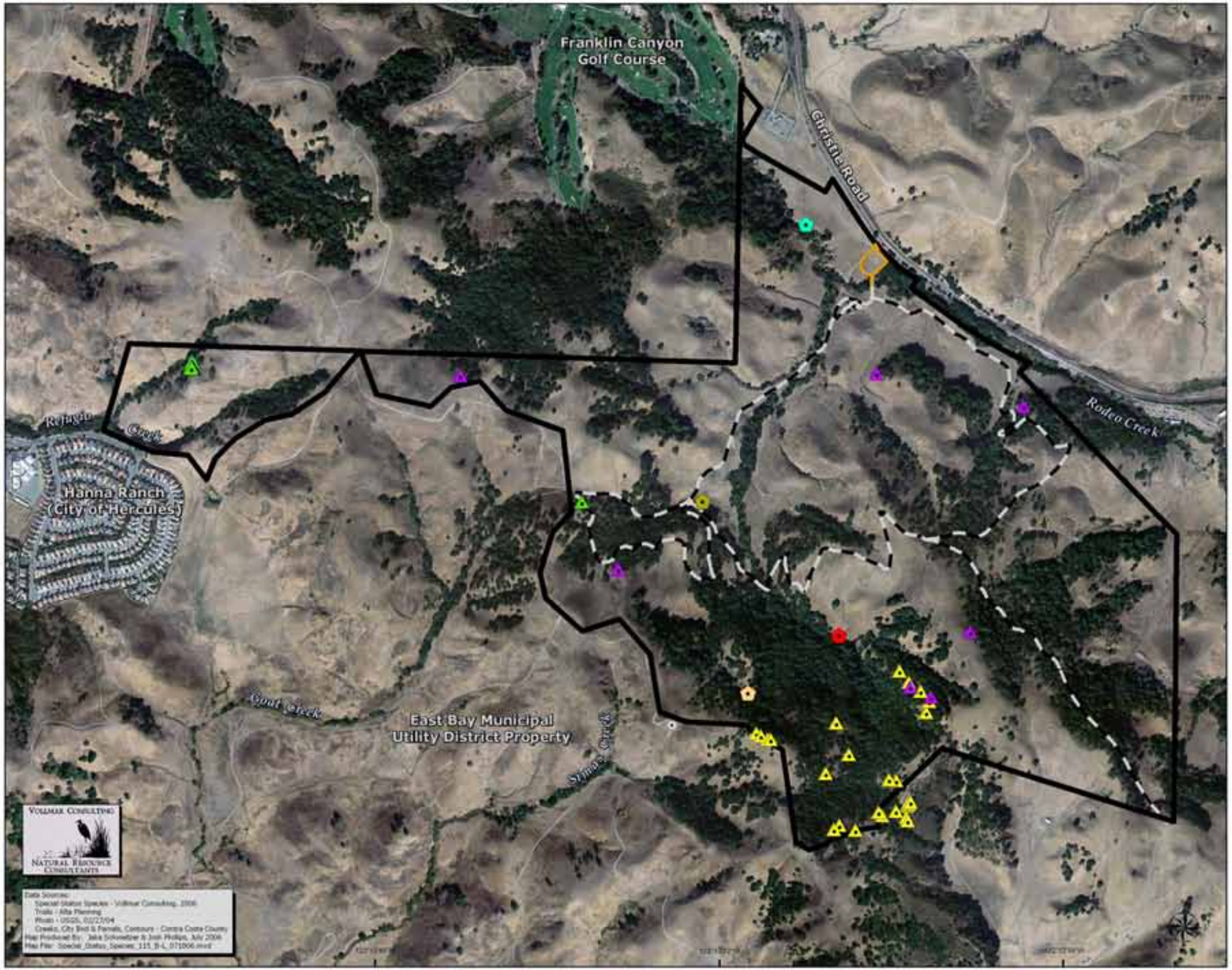
Federally Threatened, California Threatened

Background

Alameda whipsnake is a slender, fast moving, diurnal snake with a narrow neck and relatively broad head. The dorsal color is sooty-black with yellow-orange dorso-lateral stripes. The anterior portion of the stripes and ventral surface of the snake are heavily pigmented with orange-rufous coloration (Riemer 1954). Adults reach up to five feet in length (Swaim 1994). The snake has a very narrow range, restricted to the inner Coast Ranges in western and central Contra Costa and Alameda counties, within the broader range of the more common California striped racer (*M. l. lateralis*). Alameda whipsnake is federally and state listed as threatened due to its highly restricted range and continuing loss of habitat to development. Critical habitat was formerly designated for the species but vacated through a court action. The Fernandez Ranch site lies entirely within formerly designated critical habitat (USFWS 2000), within Recovery Unit 1-Tilden-Briones Unit.

FIGURE 9
Special-Status Plant and Wildlife Species

Fernandez Ranch
Muir Heritage Land Trust
Contra Costa County, California



Legend

Observed Special-Status Wildlife Species
- American badger
- California red-legged frog
- Woodrat nest
- Western pond turtle

Observed Special-Status Plant Species
- Robust monardella
- Diablo helianthella

Other Regionally Rare Plant Species
- Bolander's woodland star

Proposed Project Features
- Proposed Trail Alignment
- Staging Area

Acres
10
2.5

1:12,000 (B-Size) | 1:1,000 (D-Size)
(1-in = 1,000-ft at B-Size | 500-ft at D-Size)
0 125 250 500 Meters
0 250 500 1,000 1,500 2,000 Feet

The Alameda whipsnake has commonly been reported to have a specific association with chaparral and scrub plant communities (Swaim 1994, U.S. Fish and Wildlife Service 1997). However, recent telemetry data indicate that, although home ranges of Alameda whipsnakes may center on shrub communities, the subspecies ventures into adjacent habitats, including grassland, oak savanna, and occasionally oak-bay woodland. Therefore, habitat associations for this subspecies should include those that co-occur in the general chaparral/scrub habitat mosaic (Alvarez 2006). In particular, annual grassland, oak woodland, and riparian habitats, as well as non-natural and disturbed open habitats associated with chaparral/scrub plant communities, are also considered potential habitat for the Alameda whipsnakes (Alvarez 2006). Core areas (areas of concentrated use) of the Alameda whipsnake most commonly occur on east, south, southeast, and southwest facing slopes. However, recent information indicates that whipsnakes do make use of north facing slopes in more open stands of scrub habitat (Alvarez 2006). Rock outcrops are considered an important feature of Alameda whipsnake habitat because they provide retreat opportunities for whipsnakes and also promote lizard populations. Lizards, especially the western fence lizard (*Sceloporus occidentalis*), appear to be the most important prey item, although other prey items are taken, including skinks, frogs, snakes and birds (USFWS website).

Occurrence On and Adjacent to the Site

Alameda whipsnake has been documented approximately 0.10 mile west of the northern boundary of the site on the Franklin Canyon Property. Given the proximity of this occurrence and the similarity of habitats between the two sites, it is assumed that the snake occurs on the site. There are only limited areas of scrub habitat on the site, due perhaps to current grazing practices and/or site geomorphic characteristics. Nonetheless, the mosaic of scrub, grassland, and woodland habitats, along with the presence of rock outcrops, provide good quality habitat for the snake. Since all of the habitats on the site may be used as foraging or sheltering habitat or for movement, the entire site should be regarded as providing potential habitat for the snake. The site is probably used for regional movement by the snake given the connectivity of this site with adjacent open lands occupied by the snake.

Western Pond Turtle (*Clemmys marmorata*)

California Species of Special Concern

Background

Western pond turtle is a small to medium sized drab brown to tan turtle. It is the only turtle native to California. Current taxonomy recognizes two subspecies, the northwestern pond turtle (*Clemmys marmorata marmorata*) and the southwestern pond turtle (*Clemmy marmorata pallida*), and these hybridize through a broad portion of the species' range. Western pond turtle is considered a state species of special concern due to the historic and continuing loss of habitat.

Western pond turtle primarily inhabits perennial aquatic habitats, including ponds, slow moving streams, lakes, marshes, and canals. The species frequently basks on logs or other objects out of the water. Turtles use upland habitats, usually grasslands, in the vicinity of aquatic habitats for egg-laying, hibernation, and aestivation. Egg-laying sites are typically within 200 meters, but as far as 400 meters from their primary habitat. Grassy, south-facing slopes are preferred for egg-laying. Mating typically occurs in late April or early May and most egg-laying occurs during May and June, although some individuals may deposit eggs as early as late April and as late as early August. Hatchlings emerge after approximately three months and require shallow water habitat with relatively dense submergent or short emergent vegetation in which to forage.

Occurrence On and Adjacent to the Site

In March 2006, Jake Schweitzer of Vollmar Consulting observed a single adult western pond turtle crawling up a grassy swale on the banks of Rodeo Creek near the northern site boundary (Figure 9). Given that no suitable aquatic habitat occurs on the site (no perennial ponds or slow-moving creeks), it is assumed that the turtle had moved up Rodeo Creek from the adjacent Franklin Canyon Golf Course Property. The CNDDB contains records for western pond turtle from this lower portion of Rodeo Creek and within a man-made pond on the Franklin Canyon Golf Course. These records are both located approximately 0.60 mile northwest of the northern Fernandez Ranch boundary. Western pond turtles have not been observed in any of the stock ponds on the site and are not expected to occur since they are small and do not provide protected basking sites. However, given the documented presence of a western pond turtle within Rodeo Creek and the fact that the species has been observed moving to upland habitats adjacent to the creek, it is assumed that the species can move throughout Rodeo Creek and its larger tributaries on the site. Upland habitat adjacent to the creek and tributaries should be regarded as potential nesting habitat, especially annual grasslands, within 400 meters of the creek zone.

Cooper's Hawk (*Accipiter cooperi*)

California Species of Special Concern

Cooper's hawk is a medium-sized raptor that preys on a variety of bird species, small mammals, and reptiles. Breeding pairs generally select nest sites within dense stands of live oak woodland, riparian habitats, or other wooded areas. Nesting also occasionally occurs in sparsely wooded areas, including suburban areas and parks.

The CNDDB contains a nesting record on the adjacent Franklin Canyon site, approximately 0.05 mile north of the western boundary of Fernandez Ranch. Given the presence of suitable nesting habitat and documented nesting in the area, Cooper's hawk is expected to nest and forage on Fernandez Ranch. An inactive nest believed to belong to this species based on nest construction was observed on the site during the 2006 field season (Stromberg pers. comm.).

Golden Eagle (*Aquila chrysaetos*)

Federal Bird of Conservation Concern, California Species of Special Concern, California Fully Protected Species

Golden eagles nest on cliff-walled canyons and large trees in open areas. The species generally occurs in lightly forested areas or in forests with open areas nearby. It typically forages in open grasslands. While this species has not been observed on the site, the presence of suitable nesting habitat and known nesting occurrences in the area imply that the species could potentially nest and forage on the site.

Northern Harrier (*Circus cyanus*)

California Species of Special Concern

Northern harrier inhabits open grasslands, agricultural areas, and marshes. Nests are constructed on the ground, generally in areas where tall grasses provide cover. Individuals are commonly seen foraging close to the ground in open grasslands, marshes, and agricultural fields. Individual harriers have been observed foraging on the site and given the presence of suitable nesting habitat, this species has some potential to nest on the site.

Yellow Warbler (*Dendroica petechia brewsteri*)

California Species of Special Concern

Yellow warbler nests in dense riparian habitats dominated by willows, alders, or cottonwoods. Areas along Refugio Creek and Rodeo Creek that are dominated by willows provide suitable nesting habitat for the species. Given the presence of suitable nesting and foraging habitat, this species could occur on the site. There are no CNDDB records or other documentation indicating the presence of this species in the project site vicinity.

White-tailed Kite (*Elanus leucurus*)

California Fully Protected Species

White-tailed kites typically nest in trees, often in isolated stands surrounded by open foraging habitat. Nests are built on top of oaks, willows, or other dense broad-leafed deciduous trees within partially cleared or cultivated fields, grasslands, marsh, riparian, woodland, and savannah habitats. Given the presence of suitable nesting and foraging habitat, this species could occur on the site. There are no CNDDB records or other documentation indicating the presence of this species in the project site vicinity.

Loggerhead Shrike (*Lanius ludovicianus*)

Federal Bird of Conservation Concern, California Species of Special Concern

Loggerhead shrike is a predatory passerine that generally forages in grasslands with scattered shrubs, trees, fences or other perches. Nesting habitat includes coastal scrub, other shrubby vegetation, and small trees. Given the presence of suitable nesting and foraging habitat, this species could occur on the site. There are no CNDDB records or other documentation indicating the presence of this species in the project site vicinity.

San Francisco Dusky-footed Woodrat (*Neotoma fuscipes annectens*)

California Species of Special Concern

The dusky-footed woodrat is a medium-sized native rodent that inhabits dense forest and riparian habitats. The San Francisco dusky-footed woodrat is a locally endemic subspecies apparently restricted to the greater San Francisco Bay region. Dusky-footed woodrats inhabit dense forest and riparian environments. Evergreen or live oaks and other thick-leaved trees, and shrubs are important habitat components for this species (Kelly 1990, Williams et al. 1992). They are highly arboreal (Kelly 1990). Woodrats build nests (i.e., stickhouses), often over the period of several generations, by piling up sticks, rocks, and other available material.

Several woodrat nests were observed within the understory of shaded, mesic coast live oak/bay forest, often near a riparian corridor on Fernandez Ranch. One of these nest locations is shown on Figure 9. As Fernandez Ranch is within the known range of the *annectens* subspecies (Hall 1959), these nests are believed to be those of the San Francisco dusky-footed woodrat. There are no CNDDB records or other documentation indicating the presence of this species in the project site vicinity.

American Badger (*Taxidea taxus*)

California Species of Special Concern

The American badger is generally associated with drier open stages of shrub, forest, and herbaceous habitats. While badgers prefer areas with friable soils, they will also occupy areas with denser soils when prey is available. In June 2006, Cassie Pinnell of Vollmar Consulting observed an individual badger in the central portion of Fernandez Ranch (Figure 9). A few suspected badger dens were also observed. There are no CNDDB records for this species in the project vicinity.

Pallid Bat (*Antrozous pallidus*)

California Species of Special Concern

Pallid bats generally occur in arid habitats, including grasslands, shrublands, woodlands and forests. The preferred roost sites for the species include rocky outcrops, cliffs, crevices, and oak woodlands with access to open habitats for foraging. This species is often associated with oak woodlands (Pierson 2005). Given the presence of mature oak woodlands and its known occurrence in the general project region, this species could roost and forage on the site. There are no CNDDB records for this species in the project vicinity.

4.4.2 Special-Status Plants

Table 6 identifies 14 locally occurring special-status plant species that are associated with the habitat types present on Fernandez Ranch. Two of these, Diablo helianthella and robust monardella, were observed on the site during field surveys conducted for this project. Five other species were determined to have potential to occur based on the results of site habitat assessments and known occurrence in the site vicinity. These include bent-flowered fiddleneck, big tarplant, Mt. Diablo fairy lantern, western leatherwood, and Contra Costa goldfields. The remaining species are not expected to occur on the site due to a lack of suitable habitat or a lack of known occurrences in the project vicinity. In addition to these special-status plant species, several species identified as regionally rare or unique species by the local CNPS chapter were found on the site. These species included Oregon oak, Bolander's lithophragma, Scouler's willow, and dobiepod.

The distribution and habitat preferences of Diablo helianthella and robust monardella are discussed below. Information on the other species is presented in Table 6. Figure 9 presents the mapped occurrences of special-status plants on the site. Note that the occurrences of all species represent only those occurrences documented during general site surveys and do not represent the full distribution of these species on the site.

Diablo Helianthella (Helianthella castanea)

CNPS List 1B

Diablo helianthella is a fairly large herbaceous plant with showy, sunflower-like flowers. Except for an unusual occurrence in San Diego County, it is locally endemic the central Coast Ranges of California. The large majority of documented occurrences are within Alameda and Contra Costa counties in the general vicinity of Mt. Diablo (hence the common name). Diablo helianthella occur on grassy and scrubby slopes, often along forest and woodland margins and openings. It can also occur in the understory of these habitats.

Several localized clusters of Diablo helianthella were identified on the site. All occurrences were on steep

slopes and ridgelines in the southeast portion of the site. Its occurrence in this region appears to be related to different soils as compared with other region of the site. The scrub habitats in this area had a high component of shrubs not generally found elsewhere on the site such as bush monkeyflower, chamise (*Adenostemma fasciculatum*), California sagebrush (*Artemesia californica*), and California broom (*Lotus scoparius*).

Robust Monardella (*Monardella villosa* ssp. *globosa*)

CNPS List 1B

Robust monardella is a small, semi-woody perennial plant with bright lavender flowers in head-like clusters. This subspecies (*M. v.* ssp. *globosa*) is known from fewer than 20 extant occurrences and is primarily concentrated in the greater San Francisco Bay region. It is distinguished from the more common subspecies (*M. v.* ssp. *villosa*) by its larger plant height, leaf length, and inflorescence width. Nearly all of the plants found on the site exhibited the larger features of the rarer subspecies and were identified as such. Robust monardella occurs sporadically on the project site in protected areas along the margins of forest, woodland and scrub habitats (Figure 9).

4.5 Invasive Wildlife and Noxious Weeds

Bullfrog was the only invasive wildlife species identified on the site. This species poses a significant threat to California red-legged frog as a predator and competitor. Josh Phillips observed three or four subadults within a pool along the lower reach of Rodeo Creek during night surveys conducted June 30. No other bullfrog adults, larvae, or egg masses were found on the site during the various surveys conducted during the winter, spring, and summer. Given the apparent lack of breeding by bullfrogs on the site, it is assumed the subadults bullfrogs had migrated up Rodeo Creek from ponds on nearby Franklin Golf Course. While no evidence was found during field surveys, it is likely that feral pigs and feral domestic cats occur on the site at various times. Rooting by feral pigs can cause serious habitat degradation. Feral cats pose a threat since they predate on native wildlife.

Several noxious weeds occur on the project site (Appendix A-2). The most widespread and established weeds include yellow star-thistle and Italian thistle. The largest and densest stands of yellow star-thistle occur on moderate to steep grassland slopes, primarily in the central and eastern portions of the site. Italian thistle occurs sporadically throughout the site in association with grassland, scrub, and woodland communities. There are large dense stands in the far western portion of the site where there has been no grazing for several years. While consideration should be given to minimizing activities that may cause the dispersal of these weeds, both species are effectively distributed through the site and thus cannot really be dispersed any further.

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APPENDIX A

LISTS OF ALL WILDLIFE AND PLANT SPECIES OBSERVED ON FERNANDEZ RANCH DURING 2006 FIELD SURVEYS

Appendix A-1. List of wildlife species observed on the Fernandez Ranch site during 2006 field surveys conducted by Vollmar Consulting and Resources Design Group. '++' federal and/or state listed species; '+' indicates other species-status species; '*' indicates invasive species of management concern.

	FAMILY/Scientific Name	Common Name
	Amphibians	
	Pseudacris regilla	Pacific chorus frog
++	*Rana draytonii*	California red-legged frog
*	*Rana catesbeiana*	Bullfrog
	Taricha torosa	California newt
	Reptiles	
	Elgaria coerulea	Northern alligator lizard
	Eumeces skiltonianus	Western skink
	Sceloporus occidentalis	Western fence lizard
	Pituophis melanoleucus	Gopher snake
	Thamnophis elegans	Terrestrial garter snake
+	*Clemmys marmorata*	Western pond turtle
	Birds	
	Agelaius phoeniceus	Red-winged blackbird
	Aphelocoma californica	Western scrub-jay
	Bubo virginianus	Great horned owl
	Buteo jamaicensis	Red-tailed hawk
	Callipepla californica	California quail
	Calypte anna	Anna's hummingbird
	Carduelis tristis	American goldfinch
	Carpodacus mexicanus	House finch
	Chondestes grammacus	Lark sparrow
+	*Circus cyaneus*	Northern harrier
	Contopus sordidulus	Western wood-pewee
	Cyanocitta stelleri	Steller's jay
	Empidonax difficilis	Pacific-slope flycatcher
	Euphagus cyanocephalus	Brewer's blackbird
	Falco sparverius	American kestrel
	Geothlypis trichas	Common yellowthroat
	Junco hyemalis	Dark-eyed junco
	Melospiza melodia	Song sparrow
	Mimus polyglottos	Northern mockingbird
	Molothrus ater	Brown-headed cowbird
	Petrochelidon pyrrhonota	Cliff swallow
	Picoides pubescens	Downy woodpecker
	Pipilo crissalis	California towhee
	Pipilo maculatus	Spotted towhee
	Piranga ludoviciana	Western tanager
	Poecile rufescens	Chestnut-backed chicadee
	Psaltriparus minimus	Bushtit
	Sayornis nigricans	Black phoebe
	Sialia mexicana	Western bluebird
	Sturnella neglecta	Western meadowlark
	Tachycineta bicolor	Tree swallow

	FAMILY/Scientific Name	Common Name
	Tachycineta thalassina	Violet green swallow
	Thryomanes bewickii	Bewick's wren
	Zenaida macroura	Mourning dove
	Mammals	
	Canis latrans	Coyote
	Lynx rufus	Bobcat
	Mephitus mephitus	Striped skunk
+	*Neotoma fuscipes annectens*	San Francisco dusky-footed woodrat (nests)
	Odocoileus hemionus	California mule deer
	Procyon lotor	Racoon
+	*Taxidea taxus*	American badger
	Urocyon cinereoargenteus	Grey fox

Appendix A-2. List of plant species observed on the Fernandez Ranch site during 2006 field surveys conducted by Vollmar Consulting. '++' indicates species-status species; '+' indicates CNPS locally rare or unique species; '*' indicates non-native species; '' indicates noxious weed species identified by the Invasive Plant Council.**

	FAMILY/SCIENTIFIC NAME	FAMILY/COMMON NAME
	Anacardiaceae	**Sumac Family**
	Toxicodendron diversilobum	Poison oak
**	*Conium maculatum*	Poison hemlock
	Eryngium sp.	Coyote thistle
**	*Foeniculum vulgare*	Fennel
	Heracleum maximum	Cow parsnip
	Lomatium utriculatum	Spring gold
	Osmorhiza chilensis	Sweet cicely
	Perideridia kelloggi	Squaw root
	Sanicula bipinnata	Poison sanicle
	Sanicula bipinnatifida	Purple sanicle
	Sanicula crassicaulis	Pacific sanicle
*	*Torilis arvensis*	Field hedge-parsley
	Araceae	**Duckweed Family**
	Lemna minor	Duckweed
	Aristolochiaceae	**Pipevine Family**
	Aristolochia californica	Dutchman's pipe
	Asteraceae	**Sunflower Family**
	Achillea millefolium	Yarrow
*	*Achyrachaena mollis*	Blow wives
	Agoseris grandiflora	Big-flowered dandelion
	Anaphalis margaritacea	Pearly everlasting
*	*Anthemis cotula*	Stinking chamomile
	Artemisia californica	California sagebrush
	Artemisia douglasiana	Douglas' mugwort
	Baccharis douglasii	Marsh baccharis
	Baccharis pilularis	Coyote brush
	Bidens cernua var. cernua	Nodding bur-marigold
**	*Carduus pycnocephalus*	Italian thistle
**	*Centaurea calcitrapa*	Purple star-thistle
**	*Centaurea solstitialis*	Yellow star-thistle
*	*Chamomilla suaveolens*	Ray-less chamomile
**	*Cirsium vulgare*	Bull thistle
*	*Cotula coronopifolia*	Brass buttons
**	*Cynara cardunculus*	Artichoke thistle
	Erigeron foliosus var. *franciscensis*	Slender fleabane
*	*Filago gallica*	Wooly filago
*	*Gnaphalium luteo-album*	Cudweed
	Grindelia camporum var. *camporum*	Great Valley gumweed
++	*Helianthella castanea*	Diablo helianthella
	Hesperevax sparsiflora var. *sparsiflora*	Erect evax
*	*Hypochaeris glabra*	Smooth cat's-ear
*	*Lactuca serriola*	Prickly lettuce
	Madia gracilis	Slender madia

	FAMILY/SCIENTIFIC NAME	FAMILY/COMMON NAME
	Micropus californicus var. *californicus*	California cottonweed
*	*Picris echioides*	Bristly ox-tongue
	Psilocarphus sp.	Woolly marbles
*	*Senecio vulgaris*	Old man of spring
*	*Silybum marianum*	Milk thistle
	Solidago californica	California goldenrod
*	*Soliva sessilis*	South American soliva
*	*Sonchus asper*	Spiny sowthistle
*	*Sonchus oleraceus*	Common sowthistle
	Wyethia angustifolia	Narrow-leaved mules-ears
	Wyethia heleneoides	Foothill mules-ears
	Xanthium spinosum	Spiny cocklebur
	Azollaceae	**Mosquito Fern Family**
	Azolla filiculoides	Duck-weed fern
	Betulaceae	**Birch Family**
	Corylus cornuta var. *californica*	California hazelnut
	Boraginaceae	**Borage Family**
	Amsinckia menziesii var *menziesii*	Menzies' fiddleneck
	Amsinckia menziesii var. *intermedia*	Common fiddleneck
	Nemophila menziesii var. *menziesii*	Baby blue eyes
	Phacelia californica	California coast phacelia
	Plagiobothrys nothofulvus	Rusty popcornflower
	Plagiobothrys trachycarpus	Rough-fruited popcornflower
	Brassicaceae	**Mustard Family**
**	*Brassica nigra*	Black mustard
*	*Capsella bursa-pastoris*	Shepherd's purse
	Lepidium nitidum	Common peppergrass
	Nasturtium officinale	Watercress
*	*Raphanus sativus*	Wild radish
	Thysanocarpus curvipes	Lacepod
+	*Tropidocarpum gracile*	Dobiepod
	Callitrichaceae	**Water Starwort Family**
	Callitriche marginata	California water starwort
	Caprifoliaceae	**Honeysuckle Family**
	Sambucus mexicana	Blue elderberry
	Symphoricarpos albus	Snowberry
	Caryophyllaceae	**Carnation Family**
*	*Cerastium glomeratum*	Mouse ear chickweed
*	*Silene gallica*	Windmill pink
*	*Spergula arvensis*	Corn sandspurry
*	*Spergularia rubra*	Purple sandspurry
*	*Stellaria media*	Common chickweed
	Convolvulaceae	**Morning-glory Family**
*	*Convolvulus arvensis*	Common bindweed
	Cucurbitaceae	**Cucumber Family**
	Marah fabaceus	California manroot
	Cyperaceae	**Sedge Family**
	Cyperus eragrostis	Tall nut-sedge

	FAMILY/SCIENTIFIC NAME	FAMILY/COMMON NAME
	Dennistaedtiaceae	**Bracken Family**
	Pteridium aquilinum var. pubescens	Bracken fern
	Dryopteridaceae	**Wood Fern Family**
	Dryopteris arguta	California wood fern
	Equisetaceae	**Horsetail Family**
	Equisetum sp.	Horsetail
	Euphorbiaceae	**Spurge Family**
	Eremocarpus setigerus	Turkey mullein
	Fabaceae	**Legume Family**
	Lathyrus vestitus var. *vestitus*	Wild pea
*	*Lotus corniculatus*	Bird's-foot trefoil
	Lotus scoparius	Deerweed
	Lotus wrangelianus	Calf lotus
	Lupinus albifrons var. *albifrons*	Silver bush lupine
	Lupinus bicolor	Miniature lupine
	Lupinus nanus	Sky lupine
*	*Medicago polymorpha*	California bur-clover
*	*Melilotus indicus*	Sour clover
	Rupertia physodes	California tea
	Trifolium bifidum var. *decipiens*	Clover
	Trifolium campestre	Hop clover
	Trifolium ciliolatum	Tree clover
*	*Trifolium dubium*	Little hop clover
*	*Trifolium fragiferum*	Strawberry clover
*	*Trifolium glomeratum*	Clustered clover
*	*Trifolium hirtum*	Rose clover
	Trifolium microcephalum	Small-headed clover
*	*Trifolium subterraneum*	Subterranean clover
	Trifolium variegatum	White-tip clover
*	*Trifolium willdenovii*	Tomcat clover
*	*Vicia sativa* ssp. *sativa*	Spring vetch
	Vicia villosa	Hairy vetch
	Fagaceae	**Beech Family**
	Quercus agrifolia	Coast live oak
	Quercus douglasii	Blue oak
+	*Quercus garryana* var. *garryana*	Oregon oak
	Quercus kellogii	California black oak
	Quercus lobata	Valley oak
	Geraniaceae	**Geranium Family**
*	*Erodium botrys*	Broadleaf filaree
*	*Erodium cicutarium*	Redstem filaree
*	*Erodium moschatum*	Whitestem filaree
*	*Geranium dissectum*	Cutleaf geranium
*	*Geranium molle*	Crane's bill geranium
	Grossulariaceae	**Gooseberry Family**
	Ribes sp.	Currant
	Iridaceae	**Iris Family**
	Sisyrinchium bellum	Blue-eyed grass

	FAMILY/SCIENTIFIC NAME	FAMILY/COMMON NAME
	Juncaceae	**Rush Family**
	Juncus balticus	Baltic rush
	Juncus bufonius	Dwarf toad rush
	Juncus occidentalis	Western rush
	Juncus xiphioides	Iris-leaved rush
	Juncaginaceae	**Arrow-grass Family**
	Lilaea scilloides	Awl-leaf lilaea
	Lamiaceae	**Mint Family**
*	*Lamium amplexicaule*	Giraffe's head
	Mentha sp.	Mint
++	*Monardella villosa* ssp. *globosa*	Robust monardella
	Monardella villosa ssp. *villosa*	Coyote mint
	Stachys ajugoides var. *rigida*	Hedge nettle
	Lauraceae	**Laurel Family**
	Umbellularia californica	California bay
	Liliaceae	**Lily Family**
	Calochortus luteus	Yellow mariposa lily
	Chlorogalum pomeridianum var. *pomeridianum*	Soap plant
	Smilacina stellata	False Solomon's seal
	Lythraceae	**Loosestrife Family**
*	*Lythrum hyssopifolia*	Hyssop loosestrife
	Malvaceae	**Mallow Family**
*	*Malva neglecta*	Common mallow
	Sidalcea malviflora ssp. *laciniata*	Dwarf checkerbloom
	Myrsinaceae	**Primrose Family**
*	*Anagallis arvensis*	Scarlet pimpernel
	Onagraceae	**Evening Primrose Family**
	Clarkia purpurea ssp. quadrivulnera	Four spot
	Clarkia unguiculata	Woodland clarkia
	Epilobium brachycarpum	Willow herb
	Papaveraceae	**Poppy Family**
	Eschscholzia californica	California poppy
	Platystemon californicus	Cream cups
	Plantaginaceae	**Plantain Family**
*	*Plantago lanceolata*	English plantain
	Poaceae	**Grass Family**
*	*Aira caryophyllea*	Silver hairgrass
*	*Avena barbata*	Wild oat
*	*Briza minor*	Little rattlesnake grass
	Bromus carinatus var. *carinatus*	California brome
*	*Bromus diandrus*	Rip gut brome
*	*Bromus hordeaceus*	Soft chess
*	*Bromus madritensis* ssp. *rubens*	Red brome
*	*Cynosurus echinatus*	Hedgehog dogtail
	Danthonia californica	California oat grass
	Deschampsia danthonioides	Annual hairgrass
*	*Gastridium ventricosum*	Nit grass
	Hordeum brachyantherum ssp. *brachyantherum*	Meadow barley
*	*Hordeum marinum* ssp. *gussoneanum*	Mediterranean barley

	FAMILY/SCIENTIFIC NAME	FAMILY/COMMON NAME
*	*Hordeum murinum* ssp. *leporinum*	Foxtail barley
*	*Lamarckia aurea*	Goldentop
	Leymus triticoides	Creeping wild rye
*	*Lolium multiflorum*	Italian rye
	Melica torreyana	Torrey melic
	Nassella pulchra	Purple needlegrass
*	*Phalaris paradoxa*	Hood canarygrass
*	*Poa annua*	Annual blue grass
*	*Polypogon monspeliensis*	Rabbit's-foot grass
*	*Vulpia bromoides*	Fescue
*	*Vulpia myuros* var. *myuros*	Rattail fescue
	Polygonaceae	**Buckwheat Family**
*	*Polygonum arenastrum*	Common knotweed
	Pterostegia drymarioides	Woodland pterostegia
*	*Rumex acetosella*	Common sheep sorrel
*	*Rumex conglomeratus*	Clustered dock
*	*Rumex crispus*	Curly dock
	Eriogonum nudum var. auriculatum	Auricled barestem buckwheat
	Portulacaceae	**Purslane Family**
	Calandrinia ciliata	Red maids
	Claytonia perfoliata	Miner's lettuce
	Montia fontana	Water chickweed
	Primulaceae	**Primrose Family**
	Dodecatheon hendersonii	Mosquito bills
	Pteridaceae	**Brake Family**
	Adiantum jordanii	California maidenhair fern
	Pentagramma triangularis var. triangularis	Gold fern
	Ranunculaceae	**Buttercup Family**
	Ranunculus californicus	California buttercup
	Rosaceae	**Rose Family**
	Adenostoma fasciculatum	Chamise
	Aphanes occidentalis	Lady's mantle
	Heteromeles arbutifolia	Toyon
	Holodiscus discolor	Ocean spray
	Potentilla glandulosa ssp. glandulosa	Sticky cinquefoil
	Prunus subcordata	Sierra plum
	Rosa californica	California rose
**	*Rubus discolor*	Himalyan blackberry
	Rubus ursinus	California blackberry
	Rubiaceae	**Madder Family**
	Galium aparine	Catchweed bedstraw
	Galium californicum ssp. *californicum*	California bedstraw
	Galium murale	Tiny bedstraw
	Galium parisense	Wall bedstraw
	Galium porrigens var. *porrigens*	Climbing bedstraw
	Salicaceae	**Willow Family**
	Salix gooddingii	Goodding's willow
	Salix laevigata	Red willow
	Salix lasiolepis	Arroyo willow

	FAMILY/SCIENTIFIC NAME	FAMILY/COMMON NAME
+	*Salix scouleriana*	Scouler's willow
	Sapindaceae	**Maple Family**
	Acer macrophyllum	Big-leaf maple
	Aesculus californica	California buckeye
	Saxifragaceae	**Saxifrage Family**
	Lithophragma affine	San Francisco woodland star
+	*Lithophragma bolanderi*	Bolander's woodland star
	Lithophragma heterophyllum	Woodland star
	Scrophulariaceae	**Figwort Family**
*	*Bellardia trixago*	Mediterranean lineseed
	Castilleja affinis var. *affinis*	Coastal paintbrush
	Castilleja attenuata	Valley tassels
	Castilleja exserta var. *exserta*	Purple owl's-clover
	Collinsia heterophylla	Chinese houses
	Collinsia parviflora	Blue-eyed Mary
	Mimulus aurantiacus	Bush monkey flower
	Mimulus guttatus	Seep monkey flower
	Scrophularia californica	California bee-plant
	Triphysaria eriantha ssp. eriantha	Johnny-tuck
	Triphysaria pusilla	Little owl's-clover
	Veronica americana	Brooklime
	Themidaceae	**Lily Family**
	Dichelostemma capitatum ssp. *capitatum*	Blue dicks
	Triteleia hyacinthina	White brodiaea
	Triteleia laxa	Ithuriel's spear
	Typhaceae	**Cattail Family**
	Typha latifolia	Cattails
	Urticaceae	**Nettle Family**
	Hesperocnide tenella	Western nettle
	Urtica dioica	Stinging nettle
	Viscaceae	**Mistletoe Family**
	Phoradendron villosum	Oak mistletoe

APPENDIX B

REPRESENTATIVE PHOTOGRAPHS OF PLANT COMMUNITIES AND OTHER FEATURES ON FERNANDEZ RANCH

Appendix B. Representative Photographs of Fernandez Ranch, Contra Costa County, California. Photographs Taken and Compiled by Vollmar Consulting, 2006.

Photo 1: Southeast View Across Site (May 2006)

Photo 2: East View Across Site (May 2006)

Appendix B. Representative Photographs of Fernandez Ranch, Contra Costa County, California. Photographs Taken and Compiled by Vollmar Consulting, 2006.

Photo 3: Riparian Forest and Hillslope Valley Oak Stand (June 2006)

Photo 4: Coast Live Oak/Bay Forest (May 2006)

Appendix B. Representative Photographs of Fernandez Ranch, Contra Costa County, California. Photographs Taken and Compiled by Vollmar Consulting, 2006.

Photo 5: Grassy Swale with Coast Live Oak/Bay Forest in Backround (May 2006)

Photo 6: Alkali Rye Grass Stand and Coyote Brush Scrub (May 2006)

Appendix B. Representative Photographs of Fernandez Ranch, Contra Costa County, California. All Photographs Taken and Compiled by Vollmar Consulting, 2006.

Photo 7: Seasonal Pool on Rodeo Creek Terrace (January 2006)

Photo 8: Defunct Stock Pond (January 2006)

Appendix B. Representative Photographs of Fernandez Ranch, Contra Costa County, California. Photographs Taken and Compiled by Vollmar Consulting, 2006.

Photo 9: Eroded Slope Following Heavy Rains, Tributary to Rodeo Creek (June 2006)

Photo 10: Recent Alluvial Depostion, Tributary to Rodeo Creek (January 2006)

Appendix B. Representative Photographs of Fernandez Ranch, Contra Costa County, California. Photographs Taken and Compiled by Vollmar Consulting, 2006.

Photo 11: Largest Tributary to Rodeo Creek (January 2006)

Photo 12: Seasonal Creek at South End of Rodeo Creek Floodplain Terrace (June 2006)

Appendix B. Representative Photographs of Fernandez Ranch, Contra Costa County, California. Photographs Taken and Compiled by Vollmar Consulting, 2006.

Photo 13: Stock Pond in Southeast of Site (January 2006)

Photo 14: Stock Pond with California Red-legged Frog (January 2006)

Appendix B. Representative Photographs of Fernandez Ranch, Contra Costa County, California. Photographs Taken and Compiled by Vollmar Consulting, 2006.

Photo 15: Partially Silted Stock Pond (May 2006)

Photo 16: Valley Oaks Along Edge of Mixed Oak/Bay Woodland (June 2006)

Appendix B. Representative Photographs of Fernandez Ranch, Contra Costa County, California. Photographs Taken and Compiled by Vollmar Consulting, 2006.

Photo 17: Understory of Open Mixed Oak/Bay Woodland (May 2006)

Photo 18: Mixed Oak/Bay Woodland (May 2006)

Appendix B. Representative Photographs of Fernandez Ranch, Contra Costa County, California. Photographs Taken and Compiled by Vollmar Consulting, 2006.

Photo 19: Understory of Coast Live Oak/Bay Forest (June 2006)

Photo 20: Valley Oak on Hillside (May 2006)

Appendix B. Representative Photographs of Fernandez Ranch, Contra Costa County, California. Photographs Taken and Compiled by Vollmar Consulting, 2006.

Photo 21: Mixed Oak/Bay Woodland and Coyote Brush Scrub (June 2006)

Photo 22: Wildflowers (June 2006)

Appendix B. Representative Photographs of Fernandez Ranch, Contra Costa County, California. Photographs Taken and Compiled by Vollmar Consulting, 2006.

Photo 23: Close-up of Diablo Helianthella (May 2006)

Photo 24: Diablo Helianthella Near Coyote Brush Scrub (May 2006)

Appendix B. Representative Photographs of Fernandez Ranch, Contra Costa County, California. Photographs Taken and Compiled by Vollmar Consulting, 2006.

Photo 25: Diablo Helianthella with Mixed Scrub (May 2006)

Photo 26: Diablo Helianthella with California Sagebrush Scrub (May 2006)

Appendix B. Representative Photographs of Fernandez Ranch, Contra Costa County, California. Photographs Taken and Compiled by Vollmar Consulting, 2006.

Photo 27: Robust Monardella (May 2006)

Photo 28: Purple Needlegrass Stand (May 2006)

Appendix B. Representative Photographs of Fernandez Ranch, Contra Costa County, California. Photographs Taken and Compiled by Vollmar Consulting, 2006.

Photo 29: Wildflowers (May 2006)

Photo 30: Dead Coyote Pup (June 2006)

Appendix B. Representative Photographs of Fernandez Ranch, Contra Costa County, California. Photographs Taken and Compiled by Vollmar Consulting, 2006.

Photo 31: Landside at Rodeo Creek (April 2006)

Photo 32: Slumping Soils at West Edge of Project (April 2006)