TAJIGUAS LANDFILL EXPANSION PROJECT,
SANTA BARBARA COUNTY, CALIFORNIA

BIOLOGICAL ASSESSMENT

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BIOLOGICAL ASSESSMENT
TAJIGUAS LANDFILL EXPANSION PROJECT

BIOLOGICAL RESOURCES

1.0 INTRODUCTION

This Biological Assessment will facilitate consultation with the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG) under the Federal And California Endangered Species Acts, respectively. It provides supplementary information to that contained in the Environmental Impact Report (EIR) for the Tajiguas Landfill Expansion Project. The EIR contains a full analysis of the impacts of the project and its alternatives on rare, threatened, and endangered species, as required by the California Environmental Quality Act (CEQA). This biological assessment provides detailed accounts of the distribution, status, potential projects impacts to, and mitigation for special-status species.

Biological resources consist of terrestrial and aquatic flora and fauna, including rare, threatened, and endangered species. Most of the field work and literature review for this report was completed in 1998 to address the environmental setting and impacts related to two potential configurations of the proposed landfill expansion: the Front Canyon expansion configuration and the Back Canyon expansion configuration. The "No Project" alternative was also evaluated at this time. Additional fieldwork and literature review was conducted in May 2000 to address changes in the "footprint" of the Back Canyon configuration. Approximately five acres of the adjacent Baron Ranch property, located in the Arroyo Quemado watershed immediately east of the landfill, will be impacted by activities associated with landfill expansion; however, this disturbance area was not evaluated for this report. The region of influence for this report is defined as the Canada de la Pila watershed however, literature and museum records from southern Santa Barbara County, especially the south-facing slopes of the Santa Ynez Mountains, were evaluated for this report.

2.0 PROJECT DESCRIPTION

2.1 Environmental Setting

Tajiguas Landfill is an existing County-owned and operated municipal solid waste disposal facility located in a coastal canyon, Canada de la Pila, approximately 26 miles west of the City of Santa Barbara (Fig. 1). The existing landfill lies approximately 1,600 feet north of U.S. Highway-101 (Fig. 2).

Canada de la Pila is a seasonal drainage on the south slope of the Santa Ynez Mountains. The Santa Ynez Mountains are oriented in an east-west direction, parallel to the coastline. The south-facing slopes and foothills of this range are exposed to sunlight most of the day, although summer convection fogs are common. Consequently, differences in aspect and degree of slope create a variety of microclimates, often within a small area. Prevailing winds from the northwest are somewhat deflected to the ocean by Point Conception, but sweep along the coastal terraces fronting the range.

The project area consists of gently sloping coastal terraces formed on the Runic Shale Formation that terminate abruptly at a steeply sloping outcrop of marine and terrace deposits of the Vaquero and Monterey Sandstone Formations. These sandstone outcrops are a conspicuous feature of most of the front (south-facing) range and are tilted nearly vertical (Photo 2). Northward from this geologic contact the foothills rise steeply to the crest of the range. Because of geologic and topographic controls on local watershed development, seasonal and perennial drainages on the south-facing slope of the range tend to form deep, parallel canyons that transport material from the crest of the range to the ocean. Sandstones, which may contain embedded calcareous material, alternates with shales. The Vaquero Sandstone functions as a perched aquifer, into which wells have been driven for residential and agricultural use. The existing landfill
Figure 1

County of Santa Barbara
Tajiguas Landfill Expansion Project
Biological Assessment

Regional Location Map

Source: County of Santa Barbara (1998)

Hunt & Associates
lies on the relatively impermeable Runic Shale Formation. Soils derived from the shales tend to be deep, heavy clays, while those developed from the sandstone parent material vary from to thin and poorly developed sandy loams (Shipman, 1981).

The lower reach of Canada de la Pila and the adjacent floodplain has been disturbed by landfill activities. Two sedimentation basins were constructed in the active stream channel immediately north and west of the existing landfill (Photo 5). Appendix 5 contains additional information on the history and maintenance of these basins. The basins are filled from the natural-bed stream to the north. Overflow from the sedimentation basins is conveyed into a 48-inch subterranean culvert that runs along the west side of the landfill, then discharges to a concrete outlet structure as surface flow south of the landfill. The lower portions of the creek have been modified by construction of the main access road to the landfill, commercial development, and construction of Highway 101. Fuel breaks have been cut along the east and west ridgelines of the canyon, and curve around to the north along the northern property boundary. Within the canyon, much of the original topography has been altered to provide space and cover material for landfill operations (Photos 6 and 7). The existing northern and eastern slopes in the back canyon have been excavated as a source of cover material. The west side of the back canyon is relatively undisturbed and supports a coastal live oak woodland canopy with a mesic scrub and chaparral understory (Photos 5 and 6).

Los Padres National Forest lands abut the northern border of the landfill. U.S. Highway 101, the Southern Pacific railroad tracks, and the Pacific Ocean are located south of the landfill. High-voltage transmission lines, and oil and gas pipelines run east west along the terrace north of the highway. Properties east and west of the landfill are used primarily for agriculture or grazing land. Most of the terraces along the Gaviota coast have been used as cattle grazing range for many decades. Some of the larger canyons contain producing avocado and citrus orchards. Arroyo Quemado, which drains the canyon immediately east of the landfill, has been extensively planted in avocados. The former Baron Ranch, which is situated in this canyon, is County-owned (Photo 1). A small cluster of homes (Arroyo Quemado Community) is located along the bluff west of the mouth of Arroyo Quemado, south of the Union Pacific (formerly Southern Pacific) railroad tracks. Canada de la Huerta, immediately west of Canada de la Pila, is the site of the former Shell Hercules Project and has recently been disturbed by extensive soil remediation activities (Fig. 1).

2.2 Project Background

Tajiguas Landfill was opened by the County in 1967 for the disposal on non-hazardous municipal solid waste. The landfill is primarily located on a 130-acre, County-owned parcel (referred to in this document as the "Front Canyon"). Approximately 78 acres of this parcel have been used for the disposal of solid waste. A separate, 282-acre, County-owned parcel extends northward from the 130-acre parcel (referred to in this document as the "Back Canyon"). Currently, approximately nine acres of the existing landfill footprint extends into the back canyon and a portion of the remaining 273 acres of this parcel has been utilized for soil excavation operations to provide cover material for the landfill (County of Santa Barbara Public Works Department, 1998).

In 1997, the landfill accepted an average of approximately 735 tons of solid waste per day, while operating six days a week (County of Santa Barbara Public Works Department, 1998). The majority of Tajiguas Landfill that has been used for waste disposal rests on marine shale/claystone and is unlined. A composite liner system has been installed along a portion of the eastern canyon wall that forms the eastern limits of the existing landfill. A landfill gas collection system was installed at the landfill in 1998, as part of the ongoing landfill operations.

Under its current permits, it is anticipated that Tajiguas Landfill can operate under current methods for approximately 2.5 additional years (until the year 2001). Filling the south-facing benches would provide an additional 4.5 years of life beyond the year 2001 before permitted capacity is exhausted. The County has
not designated or otherwise identified an alternative waste disposal site to accept the solid waste generated in southern Santa Barbara County after the landfill reaches its currently permitted capacity (County of Santa Barbara, 1998).

In 2000 the Benchfill Project was approved and extended the anticipated operations at Tajiguas until 2006. Filling the south-facing benches provides an additional 4.5 years of life beyond the year 2001. The proposed expansion project would extend the life of the landfill for 15 years.

2.2.1 Front Canyon Expansion. The proposed landfill expansion would consist of expansion of the existing landfill to the east and north in the Front Canyon and would increase the total landfill footprint from the existing 78 acres to approximately 134 acres under the Front Canyon Configuration. In addition, a portion of the back canyon area would continue to be used for excavation and stockpiling of soil used for landfill cover (the north borrow site). The Front Canyon expansion would increase the final elevation of the landfill to approximately 660 feet (Fig.3). A more entailed description of these expansion activities as they relate to potential impacts to biological resources follows:

**Lateral Expansion of the Eastern Landfill Face.** The east-facing slope of the canyon would be cut and graded for stability to a 2:1 (horizontal: vertical) slope or less. Approximately 208,000 cubic yards of soil would be removed and stockpiled over the existing waste fill outside the Coastal Zone to be used for landfill operations (i.e., daily cover, intermediate cover, and final cover material). An approximately five-acre area on the Baron Ranch would be graded for an access road and would have a maximum slope of 2:1. No waste is proposed to be placed on the Baron Ranch property.

**Lateral Expansion of the Western Landfill Face.** This component of the project would result in the grading of the east-facing slope of Canada de la Pila canyon west of the existing landfill. The east-facing slope of the canyon would be cut and graded for stability to a maximum slope of 2:1 (horizontal: vertical) with benches. An estimated 2,000,000 cy of soil would be removed for the Front Canyon configuration. An additional 500,000 cy would be removed from this area if needed for final cover material at landfill closure even if the proposed expansion project is not approved.

**Lateral Expansion of the Northern Landfill Face.** Currently, a portion of the existing landfill footprint extends into the back canyon of the project site. The project would extend the landfill footprint into the back canyon for waste disposal. The ridge located in the northeastern portion of the landfill would be graded to a slope of 2:1 or less. A composite sideslope liner system would be installed on the slope of the ridge prior to filling solid waste in this area. Currently this slope is vegetated with mature chaparral (Photo 4).

**Vertical Expansion of the Existing Landfill.** The Front Canyon expansion configuration would increase the maximum elevation of the landfill outside the Coastal Zone to approximately 660 feet above sea level. Composite sideslope liner systems would be installed on all slopes prior to waste disposal. The final configuration of the landfill surface at its final grade would include an appropriate slope to promote positive drainage (County of Santa Barbara, 1998).

2.2.2 Back Canyon Expansion. McClelland Engineers, Inc. (1988) evaluated an earlier expansion proposal that involved placing solid waste in the back canyon to a final elevation of 500-550 feet. This project was analyzed under 87-EIR-8. The Back Canyon configuration would increase the final elevation of the landfill in this area to 700 feet, and would tie into the existing landfill (Fig 4 and Photo 5). This configuration would increase the total landfill footprint from 78 acres to approximately 154 acres. Expansion into the back canyon would remove previously undisturbed native coastal sage scrub, chaparral, and oak woodland from the back canyon slopes. Material excavated from the back canyon would be stockpiled in the back.
canyon slopes. Material excavated from the back canyon would be stockpiled in the back canyon or on the existing landfill outside the Coastal Zone for use in landfill operations. The slopes would be 2:1 or less.

Under both the Front and Back Configurations, the total area occupied by the proposed expansion is assumed to occupy the same footprint.

2.2.3 Project Alternative: No Project. The no project alternative would allow the existing landfill to reach permitted capacity in 2006. The landfill would then close and solid waste from municipal and unincorporated areas of Santa Barbara, Goleta, and the Santa Ynez and Cuyama valleys would be disposed of at in-County or out-of-County disposal alternatives.

3.0 REGULATORY SETTING

A number of federal, state, and local regulations attempt to minimize disturbance to specific biological resources and natural habitats. These are summarized below. Several local plans, policies, and regulations that address environmental protection issues in coastal regions were initiated by federal and state laws and/or regulations.

3.1 Federal Regulations

*National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4341 et seq.).* NEPA was established to ensure that the environmental consequences of Federal actions were identified and considered in the decision-making process. NEPA requires an Environmental Impact Statement (EIS) for actions that would have a significant effect on the environment. Regulations implementing NEPA are set forth in the Council on Environmental Quality Regulations (next paragraph).

*Council on Environmental Quality (CEQ) Regulations Implementing the National Environmental Policy Act (40 CFR Parts 1500-1508).* CEQ regulations implementing NEPA establish the requirements of an EIS and the process by which Federal agencies fulfill their obligations under NEPA. The regulations also define such key terms as "cumulative impact", "mitigation", and "significantly", to ensure consistent application of these terms in environmental documents.

*Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.).* Protects threatened or endangered species, as listed by the U.S. Fish and Wildlife Service (USFWS), from unauthorized take, and directs Federal agencies to ensure that their actions do not jeopardize the continued existence of such species. Section 7 of the Act defines Federal agency responsibilities for consultation with the USFWS. The Act requires preparation of a Biological Assessment to address the effects on listed species and species proposed for listing of a project requiring an EIS.


*Clean Water Act of 1977, (33 U.S.C. 1251 et seq.).* Provides for the restoration and maintenance of the physical, chemical, and biological integrity of the nation's waters. Section 404 of the Act prohibits the discharge of dredged or fill materials into waters of the U.S., including wetlands, except as permitted under separate regulations by the U.S. Army Corps of Engineers and Environmental Protection Agency. A National Pollution Discharge Elimination System (NPDES) permit is required for all discharges to reduce pollution that could affect any form of life. The California Regional Water Quality Control Boards implement the NPDES requirements.
FIGURE 4. PHOTO-DOCUMENTATION OF SIGNIFICANT SITE FEATURES
Figure 1. Lower reach of Arroyo Quemado on County-owned Baron Ranch property, looking southeast from ridge separating this watershed from Tajiguas Landfill. Distribution and physiognomy of grassland and coastal sage scrub vegetation here is probably similar to conditions in Cañada de la Pila prior to landfill construction. 24 April 1998.

Figure 2. Site conditions from ridge above eastern landfill boundary, looking west. Proposed project would increase landfill elevation to top of ridge in center of photo. Note distinct contact zone between Rincon shale, supporting grassland and scrub vegetation, and Vaqueros sandstone, supporting chaparral vegetation. 24 April 1998.
Figure 3. Eastern edge of existing landfill. Proposed project would increase landfill elevation to top of this graded slope. Existing vegetation is primarily non-native forbs and grasses. 24 April 1998.

Figure 4. Contact zone between Rincon shale and Vaqueros sandstone formations along northeastern edge of existing landfill. Note abrupt change from grassland on shale (extreme right) to chaparral vegetation. Proposed project would expand landfill to top of this slope. 24 April 1998.
Figure 5. Cañada de la Pila streambed looking north from primary landfill access road, showing two in-channel sedimentation basins. The southern pond (foreground) is filled to capacity. The northern pond, on other side of access road berm in center of photo, is much smaller. California red-legged frogs, a federally-listed species, were found in these ponds during field surveys for this report. 24 April 1998.
Figure 6. Active landfill, looking northwest from eastern border of landfill. Cañada de la Pila watercourse flows beneath the far end of the landfill. Note scale of operation. 24 April 1998.

Figure 7. Active landfill, looking south. Proposed project would elevate landfill to top of ridge at left background. 24 April 1998.
Figure 8. Northeast corner and adjacent slopes of back canyon portion of landfill property, looking east. South-facing slopes here are covered with dense chaparral and scattered coast live oak woodland. Plummer's baccharis and Hoffmann's nightshade, sensitive plant species, were found on these slopes. Proposed back canyon expansion of landfill would cover most of these slopes. 11 May 2000.
Figure 9. South-facing slopes above northeast corner of back canyon portion of landfill, looking northwest. Stockpiled green waste is visible in lower left of photo. Slopes are covered with dense chaparral, coastal sage scrub and scattered coast live oak trees. Rock outcrops create microhabitats for ferns and other specialized plants. Proposed back canyon expansion of landfill would cover most of these slopes. 16 May 2000.
Figure 10. Baron Ranch, looking east from eastern ridge line of existing landfill property. Upper slopes are covered with dense chaparral, scattered coast live oaks, and willows, cottonwoods, California bay laurel, and sycamores in seeps emanating from rocky outcrops. Lower slopes have been converted to avocado and citrus orchards and grazing. 16 May 2000.
Executive Order 11990, Protection of Wetlands. Requires governmental agencies to provide leadership and take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out their responsibilities. Each agency is to consider factors relevant to a project proposal's effect on the survival and quality of the wetlands by maintenance of natural species and habitat diversity and stability, hydrologic utility, fish, and wildlife. Agencies are required to provide for early public review of any plans or proposals for new construction in wetlands.

Federal Coastal Zone Management Act of 1972 (16 U.S.C. Section 1451 et seq.). Authorizes the national Oceanic and Atmospheric Administration (NOAA) to make grants to states to develop coastal zone management programs in order, "...to preserve, protect, develop, and where possible, to restore or enhance the resources of the nation's coastal zone...". California has an approved management plan under the Coastal Act discussed below under state regulations.

3.2 State Regulations

California Environmental Quality Act (CEQA) of 1970 (Public Resources Code Section 21000-21177; Guidelines at Section 15000 et seq.). Provides that a plant or animal not included on state lists shall nevertheless be considered to be endangered if the species can be shown to meet the criteria for listing under the Endangered Species Act (see below). In the mandatory findings of significance (para. 15065), CEQA states that, "...any project which reduces the number or restricts the range of a rare plant or animal is significant." CEQA requires the preparation of an Environmental Impact Report (EIR) for projects that may significantly affect the environment.

California Endangered Species Act of 1984 (as amended Sept. 1984, California Fish and Game Code Section 2050 - 2098, and California Native Plant Protection Act of 1977, California Fish and Game Code Sections 1900 - 1913). State agencies are required to consult with CDFG on actions that may affect rare, threatened, or endangered species and candidate species (those under formal review for listing by the Fish and Game Commission). Recent amendments now require state lead agencies to consult with the California Department of Fish and Game if a project may affect a state-listed endangered or threatened species.

California Fish and Game Code (Sections 1601 and 1603 - Streambed Alteration Agreement). Regulate developments in onshore waters, including intermittent streams. Section 1603 requires that private entities obtain a Streambed Alteration Agreement from the CDFG prior to undertaking any construction activity within streambeds, including all intermittent as well as perennial streams. Section 1601 imposes similar requirements on state and local government agencies. Through this agreement CDFG attempts to ensure than any approved construction activity is protective of stream resources through design, construction planning, and specific mitigation measures.

Coastal Act of 1976 (California Public Resources Code, Section 30000 et seq.). Regulates development and provides protections for biological resources in the coastal zone. Provisions of the act related to onshore biological resources are administered at the county level. General Coastal Act policies that address issues of environmental protection include:

- Policy 30231 - "The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained, and where feasible, restored..."

- Policy 30233 - "The diking, infilling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division..."

- Policy 32040 - a) "Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on such resources shall be allowed within
such areas. b) Development in areas adjacent to environmentally sensitive habitat areas...shall be sited and
designed to prevent impacts which would significantly degrade such areas, and shall be compatible with the
continuance of such habitat areas."

The Coastal Act defines an "environmentally sensitive area" in Section 30107.5 as any area in which plant
or animal life or their habitats are either rare or especially valuable because of their special nature or role in
an ecosystem and which could be easily disturbed or degraded by human activities and developments.

3.3 Local Plans, Policies, and Regulations

Santa Barbara County Comprehensive Plan of 1982. Contains several elements that include
recommendations for protecting biological resources: Land Use Element (1982), Conservation Element
(1979), and Environmental Resources Management Element (1982). The Land Use Element includes
policies to protect hillsides and watersheds, streams and creeks, and flood hazard areas. The Conservation
Element discusses sensitive species and communities and provides recommendations for their management.
The County's Environmental Thresholds and Guidelines Manual (1992) establishes criteria for determining
the significance of potential biological impacts from the proposed landfill expansion project. Guidelines
include (a) tree removal; (b) habitats, areas, or species protected by state and federal laws (includes reserves,
and riparian vegetation); (c) habitats, areas, or species designated as sensitive but not given legal protection
by local, state, or federal laws, and; (d) vegetation communities important to wildlife or of limited
geographical distribution within the county or state.

Local Coastal Plan (LCP) of 1982. A portion of the existing Tajiguas Landfill is located within the Gaviota
Planning Area of Santa Barbara's LCP. Policy 9-1 requires that projects within environmentally sensitive
habitats or within 250 feet of such areas shall conform to land use policies. The coastal plan provides for the
preservation of wetlands (policies 9-6, 9-7, 9-9, 9-14), native grasslands (policy 9-18), vernal pools (policies
9-2 and 9-21), butterfly trees (policies 9-22 and 9-23), white-tailed kite habitat (policies 9-26 and 9-28),
native plant communities including endangered and rare species (policy 9-36), native oak trees (policy 9-
35), streams (policies 9-37 through 9-41, and 9-43), seabird nesting and roosting sites, and pinniped
rookeries and haul-out grounds (policies 9-24 and 9-25).

Sensitive plant communities such as oak woodlands, eucalyptus woodland used by monarch butterflies as
roost sites, and native grasslands, are designated as Environmentally Sensitive Habitats by Santa Barbara
County (County of Santa Barbara, 1995). All wetland habitats are sensitive under federal, state, and county
policies.

4.0 EXISTING CONDITIONS

4.1 Survey Methodology

Botanical Resources. This description of vegetation is based upon a review of existing information and
field surveys conducted by Hunt & Associates during the spring and summer of 1998. An earlier landfill
expansion proposal was evaluated by McClelland Engineers (1988). Several other environmental
documents related to recent oil and gas development and other projects along the Gaviota coast provided
accounts of regional and local terrestrial biology, including WESTEC (1983, 1986); ERT (1984); ADL
(1984); Howald et al, (1985); Chambers Group, Inc. (1986); URS (1987); SAIC (1990); Hunt (1991);

Many of the utilities projects are located on the coastal terraces, rather than in the canyons. For example,
the EIR for the All-American Pipeline (ERT, 1984), which crosses Canada de la Pila just north of Highway
101, was based on the Getty-Gaviota Consolidated Facility EIR (Santa Barbara County, 1984). Although
site-specific fieldwork was conducted (Rindlaub, pers. obs.), this work did not extend into the coastal canyons north of the pipeline easement.

Other information sources included reports from the California Native Plant Society (CNPS, 1998) and the California Natural Diversity Data Base for the Tajiguas, Gaviota, Solvang, and Santa Ynez Quadrangles (CNDDB, 1998); discussions with botanists familiar with the project area; and general floristic references such as Munz (1974); Smith (1976, 1998a); Holland (1986); SBBG (1988a,b); Wiskowski (1988), and Hickman (1993).

Field surveys were conducted by Katherine Rindlaub, consulting botanist, and Charis Bratt, lichenologist (Santa Barbara Botanic Garden), on April 24, May 22, and June 16, 1998. Follow-up surveys of portions of the back canyon to address changes in the Back Canyon expansion configuration were conducted by Ms. Rindlaub on May 16, 2000. The surveys were appropriately timed to allow the detection of rare plant populations in the project area. Vegetation was characterized in the field, and mapping was completed using natural color aerial photography from 1995 and 1997 (Fig. 5). The botanical resource surveys consisted of systematic investigations of the Front and Back Canyon expansion configurations, and covered most of the areas of potential disturbance, with the exception of dense coastal sage scrub and dense chaparral, which was surveyed from patch edges. Consequently, existing access roads and fuelbreaks were utilized as transects, but dense chaparral and scrub on slopes was not covered in detail. The footprint of the Front Canyon configuration was surveyed on foot and from access roads. The footprint of the Back Canyon configuration was surveyed on foot on the canyon floor, and partially above the main drainage. Fire roads on the east side of the back canyon were used to access areas on foot. All main access roads were driven and/or walked as transects to search for sensitive plant species in appropriate habitats.

All non-vascular and vascular plants identified during the field surveys are listed in Appendix 1. Lichens collected during the field surveys were deposited in the Bratt/Tucker Herbarium housed at the Santa Barbara Botanic Garden. Voucher specimens of sensitive vascular plant species were deposited in the collections of the Santa Barbara Botanic Garden. Scientific names are included for reference in the following sections that describe vegetation. Common names are used thereafter. Nomenclature follows Hickman (1993). Vegetation types are classified according to the Holland element code system, (Holland, 1986), which is used for the California Department of Fish and Game’s Natural Diversity Data Base.

Wildlife Resources. Wildlife resources discussed in this report include insect, amphibian, reptile, bird, and mammal species. Descriptions of wildlife resources are based upon a review of existing information and field surveys conducted by Hunt & Associates during the spring and summer of 1998, and during periodic site visits in 1999 and 2000. The analysis contained herein reviews, verifies, and synthesizes information previously assembled in environmental documents related to recent oil and gas development and other projects along the Gaviota coast, including: WESTEC, 1983, 1986; ERT (1984); ADL (1984); Howald et al, 1985; Chambers Group, Inc. (1986); URS (1987); SAIC (1990); Hunt (1991); Rooney Engineering, Inc. et al (1991); Dames & Moore (1991); Aspen Environmental Group (1993, 1996), as well as an earlier landfill expansion proposal evaluated by McClelland Engineers, Inc. (1988), and other references listed previously in the section dealing with vegetation survey methodology. Because the project site lies within an area that has been subjected to a number of environmental analyses, as well as intensive surveys by the author, emphasis was placed on a review of specimen sightings reported in these documents.

In addition to the field surveys for this project and review of the documents noted above, other sources of information included: museum records in the University of California Museum of Systematics and Ecology, Santa Barbara Museum of Natural History, the "Buggy Data Base" compiled by Dr. Richard Arnold for the Santa Ynez Mountains, the California Natural Diversity Data Base for the Tajiguas, Gaviota, Solvang, and Santa Ynez Quadrangles (CNDDB, 1998); review of pertinent literature sources, and discussions with agency and local biologists who have expertise in the distribution and status of wildlife and wildlife habitats of Santa Barbara County.
The wildlife resource surveys covered all areas of potential disturbance. The front and back canyon footprint and adjacent areas were surveyed on foot and from access roads. The area for the alternative project was surveyed on foot on the canyon floor, and partially above the main drainage. Fire roads on the east side of the back canyon were also covered by foot survey. All main access roads were driven, and used as transects to search for sensitive wildlife species in appropriate habitats. However, fieldwork in the back canyon area was limited, owing to the impenetrability of the chaparral vegetation. Consequently, existing access roads and fuelbreaks were utilized as transects, but the chaparral that covers the slopes of the back canyon area was not covered in detail. Small mammal trapping, originally planned as part of the wildlife surveys, was not conducted because the sensitive mammal species that may occur in this area were already known to occur in this canyon.

Fieldwork consisted of systematic surveys of the project area. All portions of the project area were surveyed, including active landfill sites. The surveys were conducted at various intervals between Spring, 1998 and Spring, 2000 by Lawrence E. Hunt as follows:

1. Site reconnaissance by vehicle and on foot on 24 April 1998, with botanist, Katherine Rindlaub.
2. Site reconnaissance by vehicle and on foot on 22 May 1998, with botanist, Katherine Rindlaub.
3. Site reconnaissance by vehicle and on foot on 16 May 2000, with botanist, Katherine Rindlaub.

The wildlife field surveys were conducted during late spring and early summer when most wildlife are above ground and active. Survey protocols varied depending upon the species concerned and habitat types encountered. All wildlife species or their sign (i.e., burrows, scat, tracks) encountered during these surveys were recorded. Potential habitat for sensitive wildlife species within and immediately adjacent to the project site was evaluated as to its present condition, suitability to support a particular sensitive species, and whether the species in question was present. California red-legged frog surveys followed the U.S. Fish and Wildlife Service recommended survey protocol (USFWS, 1997).

Dr. Richard Arnold (Entomological Consulting Services, Ltd., Pleasant Hill, California), provided a museum record, status, and literature review of sensitive insects that are known from or potentially occur within Santa Barbara County (Arnold, 1998). Insect species were included on the basis of known distribution within the vicinity of the landfill site and the presence of suitable habitat within the project area. Field surveys for insects were not conducted as part of this report. Additional information on sensitive insects from the project region came from specialists at the University of California at Santa Barbara.

4.2 Plant Communities

The distribution of vegetation types in the project area is influenced by parent rock type, slope, aspect, exposure, and land use history. The deeper, heavier soils of the coastal terraces generally support a patchwork of grassland and shrubland. There, terraces have been used as cattle grazing range for decades. Constant grazing and other types of chronic disturbance have resulted in decreased shrub cover in most area. Instead of shrub cover, large tracts are vegetated by grasslands composed predominately of introduced species. Thin, rocky soil on the steep foothill slopes favors dense native shrub cover that cattle typically avoid.

**Sensitive Plant Communities.** Riparian woodland, including southern coast live oak riparian forest (including California bay seep woodland), southern willow scrub, central coast cottonwood-sycamore riparian forest, and wetlands, are considered sensitive plant communities by federal, state, and local resource
agencies. The distribution and composition of these communities within the project area is discussed in a following section describing riparian woodlands.

Lichens. Recently, greater attention has been accorded to non-vascular vegetation by the California Native Plant Society. Lichens are particularly of interest in this context, since these long-lived amalgams of fungi and algae are often sensitive to air quality. The Tajiguas Landfill expansion site was surveyed for lichens on June 16, 1998. The investigator, Charis Bratt, Research Associate, Santa Barbara Botanic Garden, was accompanied by Kathy Rindlaub, consulting botanist. The sites surveyed were on the west side of Canada de la Pila from along the creek to the top of the ridge on the east side. The richest lichen flora was found on shaded slopes and rock outcrops. A total of 36 species of lichen were collected during this survey. Twenty-five species were found on trees and 11 species were found on rocks and soil. Some of the specimens could not be identified to species because either they were infertile or the specimen was too small. A list of lichen species found during this field survey is included in Appendix 1.

The array of lichens found during this survey was typical of those expected to occur in canyons along the south coast of Santa Barbara County. None of the species found are considered rare. Lichens known to be sensitive to air pollution were not found during this survey. A species of Ramalina (either R. leptocarpha or R. subleptocarpha) was observed on coast live oak trees in the back canyon, but was out of reach for collecting. A yellow species of Acarospora also not collected, was observed on rock outcrops along the western and northern edges of the back canyon.

Vascular Plants. Coastal sage scrub, chaparral, and grassland are the predominant types of upland vegetation in the project area. Vegetation along roads, particularly along Highway 101 and the paved access road to the landfill, is a mixture of native and horticultural species. The areal extent of the vegetation types found on the project area, as well as estimates of disturbance by habitat type, are provided in Table 1. A vegetation map of the project site, encompassing the front canyon, back canyon, and the area around the intersection of U.S. Highway 101 with the landfill access road, is shown in (Figure 5).

Table 1. Approximate areal extent of vegetation types in project area(a).

<table>
<thead>
<tr>
<th>Vegetation Type</th>
<th>Total On Site Acreage</th>
<th>Acreage Disturbed by the Proposed Project (Either Configuration)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Landfill and Support Areas</td>
<td>172.0</td>
<td>--</td>
</tr>
<tr>
<td>Support Areas (Disturbed)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual Grassland</td>
<td>60.0</td>
<td>16.0</td>
</tr>
<tr>
<td>Venturan Coastal Sage Scrub</td>
<td>18.0</td>
<td>5.0</td>
</tr>
<tr>
<td>Ruderal/Landscaped</td>
<td>55.0</td>
<td>7.0</td>
</tr>
<tr>
<td>Riparian Woodland</td>
<td>4.0</td>
<td>0</td>
</tr>
<tr>
<td>Ceanothus megacarpus chaparral</td>
<td>170.0</td>
<td>38.0</td>
</tr>
<tr>
<td>Coast Live Oak Woodland</td>
<td>14.0</td>
<td>4.0</td>
</tr>
<tr>
<td>California Bay</td>
<td>1.0</td>
<td>0</td>
</tr>
<tr>
<td>Seep Woodland</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bare Rock</td>
<td>2.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Pond</td>
<td>1.0</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>497.0</strong></td>
<td><strong>71.0</strong></td>
</tr>
</tbody>
</table>

(a) Total habitat acreage determined from Figure 5 of this report; disturbance estimates taken from Table 3.4-1 in EIR.
Non-Native Annual Grassland. This community covers most of the coastal terraces in the project area and is predominantly composed of introduced annual grasses and forbs (Fig. 4-Photos 1 and 2; Fig. 5). Native forbs, and occasionally native grasses, contribute to this community. Annual grassland typically is maintained by grazing or other regular disturbance. In areas with less consistent disturbance, coastal sage shrubs generally recolonize the grassland areas, but widespread, introduced species remain a common element among shrub clusters. Similarly, grassland colonizes openings in chaparral, following access and fire roads. Typical species include wild oats (Avena spp.), brome grasses (Bromus spp.), foxtails (Hordeum spp.), ryegrass ( Lolium), and fescues (Vulpia spp.). Purple needlegrass (Nassella pulchra), a perennial that was probably the dominant native grass in the project area prior to grazing, is scattered among the introduced species. Bur clover (Medicago polymorpha), filaree and storksbill (Erodium), sweet-clover (Melilotus), mustard (Brassica), and thistles (Carduus, Centaurea, Salsola, Silybum) are frequent introduced forbs. Some of the more common native forbs are lupine (Lupinus), filago (Filago), dove weed (Eremocarpus), tarweed (Hemizonia fasciculata), blue dicks (Dichelostemma), and clovers (Trifolium).

Venturan Coastal Sage Scrub. Prior to the onset of grazing, coastal sage scrub was probably the predominant original vegetation on the well-developed soils of the coastal terraces (Photos 1 and 2). In the project area, it is best developed in drainages and on the steeper slopes of the lower part of Canada de la Pila (Fig. 5). Scattered shrub clusters are interspersed within the grasslands that cover most of the gentler terrain on the terrace. This community is dominated by soft-leaved shrubs that are drought deciduous. In the project area, the most characteristic species are coyote brush (Baccharis pilularis) and California sagebrush (Artemisia californica). Sawtooth goldenbush (Hazardia squarrosa), morning-glory (Calystegia macrostegia), deerweed (Lotus scoparius), and giant wild rye (Elymus condensatus) also are common, and may indicate areas of recent soil disturbance. Other less frequent associates include redberry (Rhamnus croceae), lemonade berry (Rhus integrifolia), elderberry (Sambucus mexicana), poison oak (Toxicodendron diversilobum), and black sage (Salvia mellifera).

Ruderal/Landscaping. Although not recognized as a plant community, an assemblage of opportunistic colonizing species typically occur on areas that are continually disturbed (Photos 3,6,7). Many of these colonizers are also invasive. Due to constant disturbance, these species are not replaced by others more typical of stabilized soils. In the project area, most of the roadsides along the canyon floor, areas accessed by vehicle for utility maintenance, slopes above and below the landfill, and areas of recent and/or frequent slumping are classified as ruderal (Fig. 5). Typical species include Italian thistle, yellow star thistle, milk thistle, cocklebur (Xanthium strumarium), mustards, veldt grass (Ehrharta calycina), smilo grass (Piptatherum mileaeeum), and sweet-clovers.

Landscape trees and shrubs are scattered along the entrance road to the landfill, and along the side road that trends eastward north of the abandoned gas station at the highway. Landscaped and ruderal areas were lumped for mapping purposes, since both are non-native plant communities.

Groves of eucalyptus trees are a potentially sensitive vegetation type, depending on use as winter roosts by monarch butterflies (Danaus plexippus), a protected species under County and CDFG policies. Scattered clusters of eucalyptus trees have been planted in the landfill area. Stands of eucalyptus located south of U.S. Highway 101 around and west of the mouth of Arroyo Quemado are an important permanent overwintering site for monarchs (Nagano and Lane, 1985, Chambers Group, Inc., 1986; Calvert, 1991; Meade, 1999).

Riparian Woodland. This category is subdivided into three communities, as found on the project sites. These communities are:

Southern Coast Live Oak Riparian Forest (including California Bay Seep Woodland). The predominant tree species along the Canada de la Pila watercourse in the back canyon is coast live oak, with scattered individuals of California bay (Umbellaria californica) and western sycamore (Platanus
racemosa) (Photo 5). Many of the same understory species of the adjacent oak woodland are found in association with the oaks along the creek. Common understory vegetation includes are blackberry, poison oak, snowberry, and wood mint (Stachys bullata). Although the creek channel is narrow and scoured, a few colonies of horsetails (Equisetum), mugwort (Artemisia douglasiana), nutedge (Cyperus eragrostis) and cattails (Typha) survived the high flows from the unusually heavy rainfall of the past season.

The riparian corridor in Canada de la Pila is very disturbed. Access roads flank both sides of the creek on the canyon floor. Constant disturbance has resulted in invasion of the oak understory by Italian thistle, veldt grass, sweet-clover, Harding grass (Phalaris aquatica), and other weedy species. Graded fire roads run along the creek well beyond the relatively flat canyon floor. In many areas, the creek meanders around dirt piles, and lacks wetland understory vegetation (Photos 5 and 6).

Southern Willow Scrub. Typically dominated by willows, this scrub vegetation occurs on alluvium deposited in or near streams. Arroyo willows (Salix lasiolepis) are predominant along the stream corridor south of the entrance to the landfill. At least one western sycamore grows among the willows at that location. Willows are uncommon in the deeper canyon behind the landfill. A colony of narrow-leaved willow (S. exigua) extends up one of the western side drainages below what may be a freshwater seep.

Central Coast Cottonwood-Sycamore Riparian Forest. Deciduous trees, particularly western sycamore, black cottonwood (Populus trichocarpa), and white alder (Alnus rhombifolia) mix with coast live oaks, willows, and California bay in this riparian forest or woodland. Understory plants are typically blackberry, poison oak, and mugwort. In Canada de la Pila, remnants of this vegetation type occur in the upper reaches of the drainage. Scattered deciduous trees suggest it may have been more prevalent in the central and lower reaches of the canyon prior to the landfill operation. McClelland Engineers (1988), list this community as occurring in the canyon; it may have been better developed at that time however, the existing community is very patchy and depauperate.

Ceanothus megacarpus Chaparral. Dense chaparral, composed of evergreen, sclerophyllous shrubs, covers the upper slopes of Canada de la Pila (Fig. 5). It extends down to the back canyon floor (Photos 4 and 5). Although big-pod ceanothus (Ceanothus megacarpus) is probably the most common species, the chaparral in this canyon is quite diverse. It is more similar to the mixed chaparral of north-facing slopes than typical Ceanothus megacarpus chaparral. Green-bark ceanothus (Ceanothus spinosus), toyon (Heteromeles arbutifolia), laurel-sumac (Malosma laurina), black sage, sugar bush (Rhus ovata), mountain mahogany (Cercocarpus betuloides), chamise (Adenostoma fasciculatum), prickly phlox (Leptodactylon californicum), poison oak, sticky monkeyflower (Mimulus aurantiacus), holly-leaved cherry (Prunus ilicifolia), and California buckwheat (Eriogonum fasciculatum) are scattered throughout the chaparral. Morning glory, clematis (Clematis ligusticifolia), and wild cucumber (Marah macrocarpus) are common, climbing through and over the shrubs. Rock rose (Helianthemum scoparium), deerweed, and everlasting (Gnaphalium spp.) are characteristic in openings, particularly on less steep terrain.

Rock outcrops support a greater number of herbaceous plants. Some are typical of this microhabitat, such as selaginella (Selaginella sp.), coffee fern (Pellaea andromedifolia) birds foot fern (Pellaea mucronata) California polyody (Polypodium californicum), and lance-leaved dudleya (Dudleya lanceolata). Others, particularly annual wildflowers, do not germinate in the shade and accumulated leaf litter beneath dense shrub cover. These include populations of annuals such as spineflower (Chorizanthe) and navaretia (Navaretia).

At higher elevations, chamise and Eastwood manzanita (Arctostaphylos glandulosa) become more frequent. Although scrub oak (Quercus dumosa, Q. berberidifolia) was not found, bands or clusters of coast live oaks (Quercus agrifolia) are scattered on the south-facing slope, possibly along fractures where roots access perched water.
Two sensitive species, Hoffmann's nightshade (*Solanum xanti* var. *hoffmannii*) and Plummer's baccharis (*Baccharis plummerae* ssp. *plummerae*), were found associated with this community.

**Coast Live Oak Woodland.** Dominated by spreading evergreen coast live oak trees, this community typically is limited to the more mesic micro-habitats on the south-facing slopes of the Santa Ynez Mountains. Associates within this community vary according to canopy closure. Shade-tolerant understory species like snowberry (*Symphoricarpos mollis*) and canyon sunflower (*Venezagia carpesioides*) are most frequent where little direct sunlight penetrates among the trees. Openings within the woodland generally are vegetated by shrubs characteristic of the surrounding community. The locally sensitive Hoffmann's nightshade is a frequent associate at lower elevations.

In Canada de la Pila, coast live oaks are most common along the stream course, where they outline the riparian strip in the back canyon (Fig. 5; and see below). Oaks trail up the slopes in topographic folds with more northerly exposure, particularly on sandstone on the west side of the canyon. Oaks are also scattered, rather uncharacteristically, on the south-facing slopes of the back canyon. Some are associated with small tributaries to the creek. Others are not, but appear to be distributed parallel to sandstone bedding planes. Sufficient artesian water to support oaks may well up near the surface along fractures or bedding planes in the sandstone formations.

Coast live oak trees were planted several years ago west of the entrance to Canada de la Pila as mitigation to offset oak tree removal within the landfill area.

**Pool (open water) Habitat.** Two large sedimentation ponds located along the drainage at the north-northwest edge of the existing landfill support scattered colonies of nadsedge, bulrush (*Scirpus*) and cattails (Fig. 4-Photo 5; Fig. 5). Most of the emergent vegetation was fairly young. Appendices 5 and 6 contains additional information on the history and maintenance of these ponds.

### 4.3 Wildlife Habitats

Wildlife habitats discussed in this section consolidate vegetation categories described in the previous section. Several types of wildlife habitats occur in the project area. Native habitats include annual grassland (albeit dominated by non-native annual grasses), riparian oak woodland, coastal sage scrub, and chaparral. Non-native habitats include ruderal habitats disturbed by human activities, such as roads, road shoulders, ditches, work areas, and buried landfill areas. The areal extent of wildlife habitat on the project area is presented in Table 1 and illustrated in Figure 5. Sensitive wildlife species that are known to occur or potentially may occur in these habitats are summarized in Table 3 and discussed in following sections.

**Ruderal/Landscaping.** This non-native vegetation type covers approximately 55 acres of the project area. Of this total amount, approximately 7 acres would be disturbed by the proposed expansion. In general, most of the ruderal habitats within the project site are of relatively little value to most wildlife species (Fig. 4-Photos 3, 6, and 7; Fig. 5). These habitats typically are either devoid of vegetation or are vegetated with annual weedy plant species of limited wildlife value. Because of regular disturbance and lack of structural or biotic diversity, ground-dwelling wildlife species are unable to establish permanent, self-sustaining populations. Species that are able to reside or forage in ruderal habitats include common, geographically widespread species such as Pacific treefrog, western fence lizard, side-blotched lizard, gopher snake, house finch, American goldfinch, white-crowned sparrow, Virginia opossum, California ground squirrel, Botta's pocket gopher, deer mouse, western harvest mouse, house mouse, striped skunk, and coyote.

**Annual Grassland.** Approximately 60 acres of the project site are covered with this vegetation type (Fig. 4-Photos 1 and 2; Fig. 5). Of this total amount, approximately 16 acres would be disturbed by the proposed expansion project. Annual grassland, whether dominated by native or non-native grasses, supports relatively high wildlife diversity because of its areal extent and the fact that it forms a vegetative mosaic
with scrub, oak savannah, and riparian habitats, which also harbor a high diversity of wildlife species. Annual grassland generally does not support populations of amphibians because of a lack of standing water. A number of reptiles depend or substantially use grassland habitats, including the side-blotched lizard, western whiptail, western skink, gopher snake, common kingsnake, and western rattlesnake. Common bird species expected to frequent grassland habitats include red-tailed hawk, turkey vulture, American kestrel, mourning dove, western kingbird, horned lark, American crow, northern mockingbird, northern oriole, and house finch. A variety of mammals utilize grassland habitats in the project area, including brush rabbit, Audubon's cottontail, California ground squirrel, deer mouse, California vole, western harvest mouse, striped skunk, bobcat, and coyote.

**Oak woodlands.** This habitat type does not occur on the front canyon portion of the project area. Approximately 14 acres of the project site north of the landfill waste footprint and borrow area is vegetated with coast live oak woodland (Fig. 4-Photos 5 and 6; Fig. 5). Of this total amount, approximately 4 acres would be disturbed by the proposed expansion project. Oak woodlands support a diverse resident fauna. Within the project site, this habitat type is manifested as two types: upland oak woodland, and oak riparian forest associated with drainages. Due to the relatively mesic conditions found in oak woodland, amphibians like ensatina, arboreal salamander, and Pacific tree frog are expected to inhabit oak woodlands in the project area. Some of the more common reptiles that are known to frequent oak woodlands along the south slope of the Santa Ynez Mountains include southern alligator lizard, western skink, western whiptail, western fence lizard, common kingsnake, ringneak snake, and gopher snake. Bird species expected to occur in this habitat type in the project area include red-shouldered hawk, acorn woodpecker, Nuttall's woodpecker, black phoebe, northern oriole, mourning dove, house wren, plain titmouse, California towhee, and spotted towhee. Common mammals found in oak woodlands in the project area include ornate shrew, broad-footed mole, Botta's pocket gopher, Merriam's chipmunk, western gray squirrel, deer mouse, dusky-footed woodrat, California mouse, brush mouse, striped skunk, bobcat, mule deer, and black bear.

**Scrub Habitats.** Scrub habitats, including coastal sage scrub, chaparral, and riparian scrub, support a wide variety of wildlife species, because of its dense vegetative cover, structural diversity, and the abundance of food it provides. Combined, these attributes create ideal habitat for wildlife. Coastal sage scrub covers about 18 acres on the project site. Of this total amount, approximately 5 acres would be disturbed by the proposed expansion project. Chaparral covers about 170 acres of the project site (Fig. 4-Photos 4 and 5; Fig. 5). Of this total amount, approximately 38 acres of chaparral would be disturbed by the proposed expansion project. While amphibians tend to be scarce in scrub habitats because of the lack of permanent water, the reptile, bird, and mammal fauna tend to be relatively diverse. Some of the more common species expected to frequent scrub habitats within and adjacent to the project site include western fence lizard, side-blotched lizard, western whiptail, striped racer, common kingsnake, western rattlesnake, red-tailed hawk, common flicker, California thrasher, loggerhead shrike, wren, ruthful, rufous-crowned sparrow, California quail, Anna's hummingbird, western kingbird, violet-green swallow, Bewick's wren, roadrunner, house finch, California ground squirrel, Merriam's chipmunk, Audubon's cottontail, brush rabbit, California pocket mouse, agile kangaroo rat, deer mouse, California mouse, desert woodrat, coyote, gray fox, bobcat, striped skunk, mountain lion, and mule deer.

**Aquatic Habitats.** This category of wildlife habitat includes open water (ponded), riparian woodland, and seep vegetation on the project area (Table 1; Fig. 5). Aquatic habitats, including seeps, are limited in extent on the project area but contain critical wildlife habitat (Photo 5). They provide: critical breeding and foraging habitat for a number of sensitive wildlife species; a source of fresh water during the dry season; food and cover; and, they may be used as corridors for dispersal and movement. Canada de la Pila is classified as an intermittent watercourse with scattered permanent surface water. The back canyon portion of this watercourse, including the man-made impoundments (sedimentation ponds) on this drainage north of the existing landfill, support a high diversity of wildlife, including sensitive species, despite regular disturbance from landfill activities. See Appendices 5 and 6 for a detailed discussion of the history of these ponds. Seeps, covering approximately 1 acre and extensive enough to support a distinct vegetation type-
California bay seep woodland, occur along the east-facing slopes of the back canyon (Fig. 4-Photos 5 and 6; Fig. 5). Riparian woodland is mostly lacking along Canada de la Pila south of the landfill, although revegetation of the east-facing slope of this drainage with willows has been recently implemented. Riparian woodlands, covering approximately 4 acres along this drainage in the back canyon, are moderately to heavily disturbed by landfill operations (Photos 5 and 6). The proposed expansion project has been designed to avoid these habitats.

Aquatic biota found in intermittent streams include a variety of invertebrate species that complete the aquatic part of their life cycle during the wet period or have special adaptations to survive when the stream channel is dry. Seeps and perennial portions of seasonal streams also support these types of invertebrates and other invertebrate species that require one or more years for completion of their life cycle. No fishes are known to inhabit Canada de la Pila in the project area, including the sedimentation ponds. However, a variety of other vertebrate species are expected to inhabit seasonal aquatic habitats within the project site. Amphibian species to be expected in aquatic and riparian habitats include the arboreal salamander, ensatina, black-bellied slender salamander, western toad, Pacific treefrog, California treefrog, and the Federally-listed California red-legged frog (Rana aurora draytonii). The latter species is discussed in detail in later sections and in Appendices 5 and 6. Common reptiles of wetland habitats in the project area include western fence lizard, western skink, southern alligator lizard, ringneck snake, common kingsnake, and western terrestrial garter snake and two-striped garter snake. A variety of birds and mammals are expected to use wetland and aquatic habitats within the project area including common coot, pied-billed grebe, great blue heron, common egret, snowy egret, western gull, California gull, black phoebe, cliff swallow, Bewick's wren, Brewer's blackbird, red-winged blackbird, European starling, common yellowthroat, yellow-rumped warbler, song sparrow, Virginia opossum, ornate shrew, broad-footed mole, brush mouse, California mouse, dusky-footed woodrat, California vole, coyote, raccoon, bobcat, striped skunk, ringtail, and mule deer.

**Bare Rock.** This habitat type covers approximately 2 acres of the project area (Fig. 4-Photos 2 and 5; Fig. 5). Of this total amount, approximately 1 acre would be disturbed by the proposed expansion project. Rock outcroppings, especially those associated with canyon walls, provide important roosting and nesting habitats for vultures, hawks, falcons, owls, swallows, and a variety of other birds, as well as the San Diego desert woodrat (*Neotoma lepida intermedia*), a State Species of Special Concern.

### 5.0 SENSITIVE SPECIES DESCRIPTIONS

Sensitive plants with a potential for occurring in the project area are summarized in Table 2 and Appendix 1. These were selected by reviewing all species listed for Santa Barbara County by the California Native Plant Society (CNPS) (Skinner and Pavlik, 1994). These lists include all species listed by the U.S. Fish and Wildlife Service and the California Department of Fish and Game. Current lists of Federal and State sensitive plants were reviewed (USFWS, 1994, 1996, 1998a, 1998b, 1998e; CDFG, 1998; California Natural Diversity Data Base (CNDDDB), 1998). Lists of local concern species produced by the Santa Barbara Botanic Garden (1988a, 1988b) and maintained by the County of Santa Barbara (Wiskowski, 1988) were also consulted. Based on distribution and habitat requirements, many species were eliminated from further consideration by consulting the regional flora (Smith, 1976, 1998a, 1998b) and statewide floras (Hickman, 1993; Munz, 1974). Previous environmental reports that include the project area, particularly the recent EIR/EIS prepared for the Pacific Pipeline (Aspen Environmental Group, 1993), the earlier EIR for landfill expansion (McClelland Engineers, Inc., 1988), and the Arco Coal Oil Point EIR (Chambers Group, Inc., 1986), were reviewed for records of past occurrences.

This section also discusses the distribution and status of animal species in the project area that are listed, proposed, or under review (former Federal candidate species) for listing under Federal or State Endangered Species Acts (USFWS, 1994, 1996; CDFG, 1996), species recognized as rare or of Special Concern by the California Department of Fish and Game (CDFG, 1996; CNDDDB, 1998), as well as species considered locally sensitive by Santa Barbara County (County of Santa Barbara, 1992). The regional and local
distribution of these species as well as their potential for occurring in the project area is summarized in Table 3. All of the sensitive animals expected to occur in the project area are either listed on various watch lists published by wildlife agencies (Jennings and Hayes, 1994; Remsen, 1978, Williams, 1986), or are considered by local biologists to be of concern. Detailed species accounts, including status, habitat, occurrence, and life history for each sensitive wildlife species are provided in the following sections. Appendix 3 lists all wildlife species observed in the project area during field surveys for this report.

5.1 Federally-Listed and Proposed Species

This section discusses plant and animal species that are listed or proposed for federal listing as either threatened or endangered species. The Endangered Species Act of 1973, as amended, provides the legal basis for protection. Section 3 of this legislation defines an endangered species as, ""a species which is in danger of extinction throughout all or a significant portion of its range...", and a threatened species as, ""...a species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range."

There are no federally-listed plant species known or potentially occurring in the project area. Four federally-listed animal species could potentially be affected by the proposed project or project alternative. The status, life history, regional and local distribution, and known or potential occurrence of each of these species in the project area is discussed in the following accounts and summarized in Tables 2 and 3. Table 4 summarizes the known or potential occurrence of plant and animal species by regulatory status.

Gaviota tarplant (Hemizonia increscens ssp. villosa)
Status: Endangered

The Gaviota tarplant is state- and federally-listed (USFWS, 1998b,c,e). This species is endemic to the coastal terraces in the Gaviota area west to Point Conception. The nearest known locality is Canada de las Zorillas, approximately three air miles west of the project site (Rindlaub, 1994).

Based on the known distribution of this plant, preferred soil conditions, and its highly visible growth habits, it is unlikely that it occurs within the project area.

Lompoc yerba santa (Eriodictyon capitatum)
Status: Endangered

This species is state- and federally-listed (USFWS, 1998b,c,e). This shrub grows in chaparral in the Santa Ynez Mountains from the upper Canada del Cojo watershed on Hollister and Bixby ranches (west of the project area), northward to the Solomon Hills (Smith, 1976, 1998a). It has never been recorded as far east as the project site and is not expected to occur there.

Tidewater Goby (Eucyclogobius newberryi)
Status: Endangered

The tidewater goby is a state-listed (endangered) species. This small (about 2 inches long) fish formerly occurred in the lower reaches and coastal lagoons of coastal streams from Del Norte County southward to San Diego County (Swift et al, 1989). Although still found in this general range, it has been extirpated from at least 50% of the drainages it formerly occupied. Highly discontinuously distributed, most of the remaining populations are threatened by a combination of human factors, including degradation of water quality, increased sedimentation of watercourses, decrease or seasonal alteration of freshwater inflows to coastal lagoons, introduction of non-native predatory fish, and habitat modification associated with coastal
development and flood control (USFWS, 1992). Less than 20 populations remain south of Point Conception, Santa Barbara County (Swift et al, 1993)

This is the only goby species in coastal California that is restricted to low salinity waters. Although the fish can withstand higher salinities for a short time, all life stages are completed in waters with less than 10 ppt salinity. Tidewater gobies are a benthic (bottom) species and inhabit waters less than three feet deep that is slow-moving but not stagnant. The coastal lagoons where these fish reside are typically closed off from the ocean by sand bars during the summer. The substrate in these lagoons is typically sand and mud with abundant emergent and submerged vegetation. It is not known where these fish seek refuge prior to and during seasonal storm events however, they have been recorded moving as far as five miles upstream in some drainages, possibly to avoid these flushing storm flows (Irwin and Soltz, 1984; Swift, 1998).

Spawning in southern California takes place primarily from late April to July. Larvae hatch in 9-10 days and are pelagic in the coastal lagoon before developing benthic habits. This is typically an annual species, although individuals may live up to three years depending on environmental conditions (Swift et al, 1989, 1993).

This species has been found in coastal lagoons east and west of Canada de la Pila, including Bell Canyon, Tecolote Canyon, Refugio Creek, Arroyo Quemado, Arroyo Hondo, and Gaviota Creek (Hunt, pers. obs.; Swift et al, 1989, 1993; Ambrose et al, 1993). However, it is unlikely that tidewater gobies occur as a self-sustaining population in the lower reaches of Canada de la Pila, including the small terminal lagoon for two reasons: (a) this drainage does not appear to convey sufficient freshwater inflows during the summer to create and maintain a persistent terminal lagoon or even surface water in the lower reaches of the creek, and; (b) Ambrose et al (1993) found several previously unknown goby populations along the south coast of Santa Barbara County in 1992 and 1993 at locations which were repeatedly sampled for this species prior to this date. From this information it appears that gobies may colonize adjacent drainages from "source" populations (i.e., drainages that support large, persistent populations), during years when the salinity of nearshore waters is reduced by freshwater outflows from streams and rivers during winter storms. Some of these colonized drainages become "sinks", where the colonizers are not able to maintain a self-sustaining population. Consequently, gobies disappear from these locations over time. Other drainages are able to establish a self-sustaining population and may themselves become "source" populations for other colonization sites (Swift, 1998). Alternatively, the apparent absence of gobies from streams where they were previously collected may be a sampling artifact. For example, tidewater gobies were collected from Arroyo Quemado in 1974, and Arroyo Hondo in 1934 as reported by Swift et al (1989). These drainages are immediately east and west of Canada de la Pila. However, gobies were absent from the Arroyo Hondo—when it was sampled in 1993 by Ambrose et al (1993). Persistence in Arroyo Quemado is unknown at this time. These drainages either may be population "sinks" for gobies. Alternatively, gobies may appear to be "absent" in Arroyo Hondo due to sampling error.

Excess turbidity downstream of the landfill as a result of landfill expansion is not expected to significantly affect tidewater gobies, in the event they occur in the lower portions of Canada de la Pila. Two in-channel sedimentation basins upstream of the landfill and one out-of-channel sedimentation basin remove silt from storm water runoff prior to discharge to the natural channel of Canada de la Pila downstream of the landfill. The three sedimentation basins in the upper watershed collect sediment and discharge relatively clean water to Canada de la Pila downstream of the landfill. Therefore, the project is not expected to affect larval or adult fish, if present.

Indirect impacts also may occur from predation by gulls on gobies that may be present in the lagoon at the mouths of Arroyo Hondo and Arroyo Quemado. Large numbers of gulls congregate at these water sources, apparently because of their proximity to the existing landfill.
Table 2. Potential occurrence of sensitive plant species in the project area.

<table>
<thead>
<tr>
<th>Species</th>
<th>Status</th>
<th>Habitat and Local Distribution</th>
<th>Potential Occurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nuttall's snapdragon <em>Antirrhinum nuttallianum</em></td>
<td>Local concern</td>
<td>Coastal Sage Scrub, Chaparral. A plant of rocky sites, creeks, and disturbed places, with a few locations on the mainland in Santa Barbara County. Smith (1998) records it from Carpinteria, coastal sage scrub west of Goleta, and the Hollister Ranch.</td>
<td>Potential in coastal sage scrub and chaparral in the project area. This species may have been underreported on the mainland partly due to fire suppression, since many annuals that respond to disturbance are also fire followers.</td>
</tr>
<tr>
<td>Aphanisma <em>Aphanisma blitoides</em></td>
<td>FSC CNPS 1B</td>
<td>Coastal Bluff Scrub, Coastal Sage Scrub. Known from only two occurrences in the Santa Barbara region: Pt. Sal and near Ventura. Both locations are on the immediate coast.</td>
<td>Not found. Unlikely in the project area. The project site is too far from the coast for this species.</td>
</tr>
<tr>
<td>Refugio manzanita <em>Arctostaphylos refugioensis</em></td>
<td>FSC CNPS 1B</td>
<td>Chaparral. Grows on sandstone outcrops and openings on the south side of the Santa Ynez Mountains, possibly as far east as San Pedro Canyon in Goleta. Range includes the Refugio Canyon area and extends west though the Santa Ynez Mountains to near Lompoc.</td>
<td>Not found, but potentially affected by the back canyon alternative. Potential occurrence on sandstones in Cañada de la Pila, but manzanitas were not found below 1000 feet during the project survey.</td>
</tr>
<tr>
<td>Triple-awned grass <em>Aristida adscentionis</em></td>
<td>Local Concern</td>
<td>Coastal Sage Scrub, open, dry habitats. A native grass with a wide distribution, but rarely found on the mainland in Santa Barbara County. It has been found in San Roque Canyon, Hollister Ranch, and on Figueroa Mountain (Smith, 1998).</td>
<td>Not found. Potential occurrence in chaparral openings and on rock outcrops in the back canyon. Smith (1998) comments that this grass may be more widespread than collections show, but it generally is not noticed.</td>
</tr>
<tr>
<td>Coulter's saltbush <em>Atriplex coulteri</em></td>
<td>CNPS 1B</td>
<td>Coastal Bluff Scrub, Coastal Dunes, Coastal Sage Scrub, Grasslands, generally in alkaline or clay soil. Few recent records for the mainland coast. Thought to have spread along the railroad corridors. Nearest population is near Campus Point in Goleta (Ferren, 1998).</td>
<td>Not found. Extremely unlikely to occur away from the immediate coast. No records for the Gaviota coastal area.</td>
</tr>
<tr>
<td>Davidson's saltbush <em>Atriplex serenana var. davidsonii</em></td>
<td>CNPS 1B</td>
<td>Coastal Sage Scrub, Chenopod Scrub, usually on alkaline sites. Scattered locations along the coast. May follow disturbance along road and railroad corridors (Smith, 1988).</td>
<td>Not found. Unlikely to persist in the coastal sage scrub around the project area due to long-term grazing and repeated disturbance.</td>
</tr>
<tr>
<td>Plummer's baccharis <em>Baccharis plummerae ssp. plummerae</em></td>
<td>CNPS 4</td>
<td>Coastal Bluff Scrub, Coastal Sage Scrub, Chaparral (openings), Oak Woodland. Typically this species is found on cool, moist, north-facing slopes. Occurs on both sides of the Santa Ynez Mtns. and inland to the lower Cuyama River area (Smith, 1998). Populations are in several canyons in the project area (Rindlaub, pers. obs.)</td>
<td>Found scattered among chaparral shrubs and oaks along the upper road in the vicinity of the band of Juniper sandstone on the west side of the canyon. Found in the back canyon within the proposed landfill expansion area.</td>
</tr>
</tbody>
</table>
## Table 2. Potential occurrence of sensitive plant species in the project area.

<table>
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<tbody>
<tr>
<td>Brewer's calandrinia</td>
<td>CNPS 4</td>
<td>Grasslands, open Coastal Sage Scrub. An annual wildflower, this species may be mixed among populations of common red maids (<em>C. ciliata</em>). Reported from the Gaviota Pass area (Dames &amp; Moore, 1991).</td>
<td>Not found. Possible but unlikely in openings in chaparral. Not found in lower elevation grasslands on the coastal terrace in previous surveys (ADL, 1984; Howald et al., 1985). Potentially affected by the back canyon alternative.</td>
</tr>
<tr>
<td><em>Calandrinia breweri</em></td>
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<tr>
<td>Catalina mariposa lily</td>
<td>CNPS 4</td>
<td>Woodlands, often on grassy banks and openings, Santa Ynez Mountains, especially the south side; but inland along the Santa Ynez River to Figueroa Mountain (Smith, 1998).</td>
<td>Not found along the lower elevation slopes of the project area. Potential occurrence in the upper reaches of the drainage. Potentially affected by back canyon alternative.</td>
</tr>
<tr>
<td><em>Calochortus catalinae</em></td>
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<tr>
<td>Late-flowered mariposa lily</td>
<td>FSC CNPS 1B</td>
<td>Chaparral. Generally on dry sites, in openings and along fuelbreaks along the summits and foothills on the south side of the Santa Ynez Mountains. From Ojai and Sespe Creek to Monterey County (Smith, 1998).</td>
<td>Not found during the project survey, but this species flowers late. Potential around rock outcrops and openings in chaparral. More likely at higher elevations. More likely to be affected by the back canyon alternative.</td>
</tr>
<tr>
<td><em>Calochortus weedii</em> var. vestus</td>
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<tr>
<td>South Coast Range morning glory</td>
<td>FSC CNPS 4</td>
<td>Chaparral, Woodland, Grasslands. May occur on serpentine and sedimentary substrates. Santa Barbara County occurrences are from the Figueroa Mountain area, on serpentine (Smith, 1998).</td>
<td>Extremely unlikely in the coastal area.</td>
</tr>
<tr>
<td><em>Calystegia collina</em> var. venusta</td>
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<td></td>
</tr>
<tr>
<td>Cooper's lip fern</td>
<td>Local concern</td>
<td>Vaqueros sandstone, limestone and other calcareous outcrops. Known from Tajiguas Canyon and Cañada de la Pila.</td>
<td>Known locality in Cañada de la Pila has been removed for the landfill (Smith, 1998). Potentially occurs on higher canyon slopes on sandstone, particularly the Vaqueros formation. Would potentially be affected by both project alternatives.</td>
</tr>
<tr>
<td><em>Chelisanthus cooperae</em></td>
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<tr>
<td>Creek dogwood</td>
<td>Local concern</td>
<td>Riparian, Seeps. Found in canyons along creeks from south of the Santa Barbara region north along the coast through Santa Barbara and Goleta, Las Flores Canyon (Dames &amp; Moore, 1993) to Hollister Ranch and the San Julian area, San Antonio Creek and Miguelito Canyon. It has been found in inland at Los Alamos and Zaca Lake. (Smith, 1998).</td>
<td>Potential in the deeper, or more mesic, portions of the drainage, but only moderately likely.</td>
</tr>
<tr>
<td><em>Cornus sericea</em> sep. occidentalis</td>
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<tr>
<td><em>Dichondra occidentalis</em></td>
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<tr>
<td>Blochman's dudleya</td>
<td>FSC CNPS 1B</td>
<td>Coastal Bluff Scrub, Coastal Sage Scrub, Grasslands. Nearest occurrence is at Vandenberg AB, in heavy clay soil. Nearest southern occurrence is near the Conejo Grade in eastern Ventura County on volcanics.</td>
<td>Extremely unlikely on the project site. No records for this species in the Santa Ynez Mountains.</td>
</tr>
<tr>
<td><em>Dudleya blochmaniae</em> sep. blochmaniae</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Species</td>
<td>Status</td>
<td>Habitat and Local Distribution</td>
<td>Potential Occurrence</td>
</tr>
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<td>----------------------------------------------</td>
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<td>---------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Saint’s daisy</td>
<td>CNPS 4</td>
<td>Coastal Sage Scrub, Chaparral. Most common in the north County on sandy soils. Most common in the north County on sandy soils. However, the type locality is from the Santa Ynez Mountains near Santa Barbara. Near San Marcos Pass (Smith, 1998).</td>
<td>Potential in chaparral in the project area. Like several other sensitive herbaceous species, Saint’s daisy may be more widespread in the Santa Ynez Mountains than is generally recognized due to fire suppression.</td>
</tr>
<tr>
<td>Erigeron sancarum</td>
<td>Fed. Endangered Calif. Endangered</td>
<td>Chaparral. A sticky-leaved shrub of the western Santa Ynez Mountains (Hollister Ranch) through the Purisima Hills to Solomon Hills (Smith, 1998).</td>
<td>Not found. This regional endemic is unlikely to range as far east as the project area. Potentially affected by fires resulting from project activities. Expected to resprout following fires (URS, 1987).</td>
</tr>
<tr>
<td>Lompoc yerba santa <em>Eriodictyon capitatum</em></td>
<td></td>
<td>Coastal Bluff Scrub, Coastal Sage Scrub. Most frequently encountered in the sandy dune soils of the north County. A hybrid was found in Gaviota Pass. Ranges east to Canada del Cojo and west to Los Flores Canyon near Los Alamos (Smith, 1998).</td>
<td>Very unlikely in the project area due to prolonged grazing and disturbance of the coastal sage scrub habitat.</td>
</tr>
<tr>
<td>Suffrutescent wallflower <em>Erysimum insulare</em></td>
<td>CNPS 4</td>
<td>Grassland, Coastal Sage Scrub. Coastal terraces in the Gaviota area. Hollister Ranch and Vandenberg AFB, according to recent genetic studies.</td>
<td>Not found. Project area is a few miles east of the limit of this species range.</td>
</tr>
<tr>
<td><em>ssp. suffrutescens</em></td>
<td></td>
<td></td>
<td>No found. Project area is a few miles west of the limit of this species range.</td>
</tr>
<tr>
<td>Santa Barbara bedstraw <em>Galium clifftonsmithii</em></td>
<td>CNPS 4</td>
<td>Chaparral, Oak Woodland, possibly well developed Coastal Sage Scrub. Collected from the south side of the Santa Ynez Mountains and Zaca Lake area. Possibly from Arroyo Honda.</td>
<td>Potential in the project area, particularly in the back canyon. None of the bedstraws found was <em>G. nuttallii</em>, the species most similar to <em>G. clifftonsmithii</em>.</td>
</tr>
<tr>
<td>Gaviota tarplant <em>Hemizonia increscens</em></td>
<td>Fed. Endangered Calif. Endangered</td>
<td>Grassland, Coastal Sage Scrub. Coastal terraces in the Gaviota area. Hollister Ranch and Vandenberg AFB, according to recent genetic studies.</td>
<td>Not found. Project area is a few miles east of the limit of this species range.</td>
</tr>
<tr>
<td><em>ssp. villoasa</em></td>
<td></td>
<td></td>
<td>No found. Project area is a few miles west of the limit of this species range.</td>
</tr>
<tr>
<td>Southern tarplant <em>Hemizonia parryi</em></td>
<td>FSC CNPS 1B</td>
<td>Margins of wetlands near the coast. This species reaches its northern distributional limit on the coastal terraces west of the Elwood Mesa.</td>
<td>Potential in the project area, more likely to be in the back canyon area.</td>
</tr>
<tr>
<td><em>ssp. australis</em></td>
<td></td>
<td></td>
<td>No found. Project area is a few miles west of the limit of this species range.</td>
</tr>
<tr>
<td>Southern California black walnut <em>Juglans californica</em> var. californica</td>
<td></td>
<td>Riparian woodland. Near its northern distributional limit in the project area, although it extends into northern Santa Barbara County.</td>
<td>Not found.</td>
</tr>
<tr>
<td>Robinson’s peppergrass <em>Lepidium virginicum</em></td>
<td>CNPS 1B</td>
<td>Coastal Sage Scrub, Chaparral. Few mainland records. Previously thought an introduction from the eastern U.S.</td>
<td>Potential in the project area. More likely to be in the back canyon area.</td>
</tr>
<tr>
<td>var. robinsonii</td>
<td></td>
<td></td>
<td>No found. Project area is a few miles west of the limit of this species range.</td>
</tr>
<tr>
<td>Ocellated Humboldt lily <em>Lilium humboldtii</em></td>
<td>FSC CNPS 4</td>
<td>Chaparral, Woodland, Lower Coniferous Forest. Perennial herb of creeks, seeps, and cool canyons of the Santa Ynez Mountains and inland to the Cuyama Valley and Lockwood Valley areas.</td>
<td>Not found, but potential in mesic microsites. Along the drainage or on seeps. Known from San Onofre Canyon (Kinds, 1994). More likely to persist in the back canyon area.</td>
</tr>
<tr>
<td><em>ssp. ocellatum</em></td>
<td></td>
<td></td>
<td>No found. Project area is a few miles west of the limit of this species range.</td>
</tr>
<tr>
<td>Species</td>
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</tr>
<tr>
<td>Cliff-aster&lt;br&gt;Malacothrix saxatilis&lt;br&gt;ssp. saxatilis</td>
<td>Local Concern</td>
<td>Coastal Bluff Scrub, Coastal Sage Scrub. This subspecies of cliff-aster is endemic to the coastal area from just east of the Santa Barbara/Ventura County line westward beyond Gaviota, and further inland around Lompoc and Casnalia (Smith 1998).</td>
<td>Not found. A close relative, <em>M. s. temuifolia</em> is common on disturbed roadsides in Cañada de la Pila, and does not appear to be intermediate to <em>M. s. saxatilis</em>.</td>
</tr>
<tr>
<td>Lompoc monkeyflower&lt;br&gt;<em>Mimulus aurantiacus</em>&lt;br&gt;(=<em>Diplacus longiflorus</em>) var. lompocense.</td>
<td>Local Concern</td>
<td>Coastal Sage Scrub, Chaparral, Woodlands. This entity has been completely submerged in the recent treatment of bush monkeyflowers (Hickman, 1993). It is an endemic form that ranges from Gaviota Pass to Santa Maria and Cayucos, intergrading with the more common form on the periphery of its distribution (Smith, 1998). Plants with at least some of the characters of this form have been found east of Gaviota in the vicinity of the Gaviota Oil and Gas Processing Facility (Rindtlaub, pers. obs.).</td>
<td>Not found. A follow-up survey to sample the Cañada de la Pila plants when in fruit would be advisable. As a hybrid, this species could be represented in the project area.</td>
</tr>
<tr>
<td>Fish's milkwort&lt;br&gt;<em>Polygala cornuta</em> var. <em>fishiae</em></td>
<td>CNPS 4</td>
<td>Chaparral, Oak Woodland, Riparian. Includes <em>Polygala</em> c. var. <em>pollardii</em> (Hickman, 1993). Occurs on the north side of the Santa Ynez Mountains from Refugio Pass, to the Paradise area, and the Santa Rosa Hills. Also ranges eastward into Ventura County (Smith, 1998).</td>
<td>Not found. This species is unlikely in the project area, but could occur on mesic, north-facing sites in the drainage or on the west side of the canyon.</td>
</tr>
<tr>
<td>Nuttall's scrub oak&lt;br&gt;<em>Quercus dumosa</em></td>
<td>FSC&lt;br&gt;CNPS 1B</td>
<td>Coastal Sage Scrub, Chaparral. The typical northern (or western) limit of the distribution of Nuttall's scrub oak is in the Santa Barbara and Goleta area. However, it is listed from Las Flores Canyon (URS, 1988).</td>
<td>Possible in the project area. No scrub oaks were seen during the survey.</td>
</tr>
<tr>
<td>Hoffmann's bitter gooseberry&lt;br&gt;<em>Ribes amarum</em>&lt;br&gt;ssp. hoffmannii</td>
<td>CNPS 3</td>
<td>Chaparral, mesic sites, Riparian. Endemic to the south slopes of the Santa Ynez Mountains from Las Cruces Hot Springs and Gaviota Pass to Carpinteria.</td>
<td>Potential but unlikely (due to disturbance) in the main drainage upstream of the canyon floor. Would not be affected by the sideways expansion. Not seen.</td>
</tr>
<tr>
<td>Pink-flowering currant&lt;br&gt;<em>Ribes sanguineum</em>&lt;br&gt;var. glutinosa</td>
<td>Local concern</td>
<td>Riparian, dune hollows, Chaparral. The project site is near the southern limit for this species, which has been found in Corral Canyon (Smith, 1998). It ranges north and westward in mesic habitats.</td>
<td>Potential on the project site near seeps or mesic microsites along the drainage, particularly in northeast-facing folds.</td>
</tr>
<tr>
<td>Hoffmann's sanicle&lt;br&gt;<em>Sanicula hoffmannii</em></td>
<td>CNPS 4</td>
<td>Coastal Sage Scrub, Chaparral, Oak and Evergreen Woodland. An endemic herb occasionally found in cool coastal habitats, usually under oaks, from Santa Barbara to San Luis Obispo Counties.</td>
<td>Potential in less disturbed areas of oak woodland. Not found during the field surveys. More likely to be affected by expansion into the back canyon.</td>
</tr>
</tbody>
</table>
Table 2 Potential occurrence of sensitive plant species in the project area.

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</thead>
<tbody>
<tr>
<td>Black-flowered figwort <em>Scrophularia atrata</em></td>
<td>FSC CNPS 1B</td>
<td>Coastal Sage Scrub, Coastal Dunes, Riparian, Woodlands in the coastal area. This species is   endemic to northern Santa Barbara and southern San Luis Obispo Counties. However, it has been reported from the Gaviota area, with hybrids to the more common <em>S. californica</em>.</td>
<td>All plants found in Cañada de la Pila were <em>S. californica</em>.</td>
</tr>
<tr>
<td>Rayless ragwort <em>Senecio aphanactus</em></td>
<td>CNPS 2</td>
<td>Coastal Sage Scrub, Woodlands. The annual typically grown on alkaline soils ( Skinner and Pavljk, 1994). It superficially resembles an introduced species, and may be overlooked.</td>
<td>Potential in the project area. Not found.</td>
</tr>
<tr>
<td>Hoffmann's nightshade <em>Solanum xanti</em> var. <em>hoffmannii</em></td>
<td>Local concern</td>
<td>Coastal Sage Scrub, Chaparral, Woodland. Endemic to Cañada Del Refugio area, to Nojoqui Falls, and along the Santa Rosa Road, to Miguelito Canyon and Pt. Conception.</td>
<td>Found in the back canyon. Frequent associate of oak woodland and chaparral in the project area. Most likely to be affected, if present, by expansion into the back canyon.</td>
</tr>
<tr>
<td>Sonoran maiden fern <em>Thelypteris puberula</em> var. <em>sonorensis</em></td>
<td>CNPS 2</td>
<td>Meadows, Seeps, Riparian. Grows in shaded canyons on the south face of the Santa Ynez Mountains. Several records from drainages along the Gaviota coastal area, including Arroyo Hondo and Tajiguas Canyon.</td>
<td>Potential in mesic soil on west side of canyon north of the Vaqueros sandstone strip. Potential in other shaded habitats along the riparian strip in the back canyon.</td>
</tr>
<tr>
<td>Santa Ynez false-lupine <em>Thermopsis macrophylla</em> var. <em>inermis</em></td>
<td>FSC Calif. Endangered</td>
<td>Chaparral. Known from a limited area around Santa Ynez Peak, reportedly from both sides of the range. This is a species of higher elevations.</td>
<td>Project site is a few miles west of the known distributional limit for this species. The project footprint (other than fuelbreaks) is lower in elevation than the range of this species. Not found.</td>
</tr>
<tr>
<td>Camas lily <em>Zygodon mexicanus</em> var. <em>fremontii</em></td>
<td>Local concern</td>
<td>Chaparral. This variety of chaparral zygadenes is endemic to the Santa Ynez Mountains, and to the Purisima Hills near Lompoc. Typically follows fires.</td>
<td>Potential in openings in chaparral in the project area, especially along small gullies. Could be affected by expansion into the back canyon. Not found.</td>
</tr>
</tbody>
</table>

1 Status
FSC - Federal Species of Concern (Previously Category 1 and Category 2 candidate species).
CNPS: California Native Plant Society Lists (Skinner and Pavljk, 1994):
   CNPS 1B - Plants rare, threatened or endangered in California and elsewhere.
   CNPS 2 - Plants rare, threatened or endangered in California but more common elsewhere.
   CNPS 3 - Plants about which more information is needed.
   CNPS 4 - Plants of limited distribution: a 'watch' list.
Local Concern (Smith, 1998) and SBBG (1988).

2 Data on distribution from Smith (1998), unless otherwise noted.
Southern steelhead (*Onchorhynchus mykiss*)

**Status: Endangered**

Steelhead are an anadromous salmonid that spends a portion of its life cycle in the ocean, then enters freshwater to spawn. A sea-run rainbow trout is a steelhead (Miller and Lea, 1972). The southern steelhead is a winter-run form that enters freshwater during the winter when outflows from streams and rivers are sufficiently high to breach the sand bars that often form at their mouths and maintain an open channel. The period of river entry is dependent on the timing and duration of winter storms and corresponding elevated stream flows breaching the sand berms across the mouths of these watercourses. River entry occurs primarily in January and February in most years, although Moore (1980), and Hunt et al. (1992a), noted that steelhead are most numerous in the Ventura River in Ventura County between December and May. Spawning can occur from January through June, but peak spawning typically occurs in February and March. Females ascend their natal stream searching for clean, loose gravel along riffles. Low water temperature is important for successful spawning, larval development, and recruitment. Females deposit between 200 and 12,000 eggs in redds dug into gravel substrates. Prior to being covered with gravel, the eggs are fertilized by the male. After spawning most of the adults return to the ocean. Fry emerge from the spawning gravels in late spring after an incubation period of three to four weeks (Moyle, 1976; Winter, 1987). Juvenile steelhead typically spend at least a year, up to four years, in the watercourse before entering the ocean. In larger, perennial drainages, juvenile rearing habitat may consist of deep runs and scour pools with overhanging banks or other retreat sites. In smaller stream systems with limited upstream rearing habitat, brackish lagoons and estuaries at the mouth of streams are considered to be important rearing areas for juvenile steelhead (Smith, 1987; Swift et al., 1991). Young steelhead migrate back to the ocean when 5-10 inches long, during periods of high flow in winter and spring, and remain there for one to two years. Adults return to the stream from which they hatched and may spawn for one or two years during their adult lifespan (Moore, 1980; Reiser and Bjornn, 1979).

In 1994, the National Marine Fisheries Service (NMFS) received a petition seeking protection under the Endangered Species Act (ESA) for 178 populations of steelhead (anadromous *Onchorhynchus mykiss*) in Washington, Idaho, Oregon, and California. The ESA allows listing of "distinct population segments" of vertebrates as well as named species and subspecies. The policy of the NMFS on this issue for anadromous Pacific salmonids is that a population will be considered "distinct" for purposes of the ESA if it represents an evolutionarily significant unit (ESU) of the species as a whole. To be considered an ESU, a population or group of populations must: a) be substantially reproductively isolated from other populations, and b) contribute substantially to the ecological or genetic diversity of the biological species. Once an ESU is identified, a variety of factors related to population abundance are considered in determining whether a listing is warranted under the ESA (NMFS, 1996).

After considering available information of steelhead genetics, phylogeny and life history, freshwater ichthyogeography, and environmental features that may affect steelhead, NMFS identified 15 evolutionarily significant units (ESU)—12 for coastal steelhead and three for the inland form. NMFS reviewed populations abundance data and other risk factors for these ESUs and concluded that five ESUs, including the Central California Coast, South-Central California Coast, and Southern California ESUs, are likely to become endangered in the foreseeable future. On August 18, 1997 the Southern California steelhead ESU (among others), was listed as "Endangered" by the NMFS under the ESA (NMFS, 1997).

The Southern California ESU occupies rivers from the Santa Maria River to the southern extent of the species range (Malibu Creek, Los Angeles County, but possibly further south into northern Baja California Norte, Mexico). Genetic data show large differences between steelhead populations within this ESU as well as between these and populations in the Central California Coast and South-Central California Coast ESUs to the north. Average rainfall is substantially lower and more variable in southern California than in regions to the north, resulting in increased duration of sand berms across the mouths of streams and rivers and, in some cases, complete dewatering of the lower reaches of these streams from late spring through fall. This
affects steelhead migration patterns, as well as the ability to residualize and survive elevated water temperatures. The use of streams with elevated water temperatures suggests that steelhead in the Southern California ESU may be able to withstand higher stream temperatures than steelhead in more northern ESUs (NMFS, 1996; 1997).

Steelhead have already been extirpated from much of their historical range in the Southern California ESU (Moyle, 1989, 1995; NMFS, 1996, 1997). NMFS is concerned about widespread degradation, destruction, and blockage of freshwater habitats within this region, and the potential outcome of continued habitat destruction and water allocation problems. There was also concern about the genetic effects of widespread stocking of hatchery-raised rainbow trout. Titus et al. in prep. (in NMFS, 1996), concluded that anadromous steelhead populations had been extirpated from all streams south of Ventura County, with the exception of Malibu Creek in Los Angeles County. However, steelhead are still occasionally reported in streams where stocks were identified by these authors as extirpated (NMFS 1996). The NMFS concluded that ESUs include resident O. mykiss only in cases where they have the opportunity to interbreed with anadromous fish (NMFS, 1996). This means that resident populations above long-standing natural barriers, and those that have resulted from the introduction of non-native rainbow trout, would not be considered part of the ESUs, nor would they be eligible for listing (NMFS, 1997). Resident populations that inhabit areas upstream from man-made migration barriers, such as dams or other barriers, may contain genetic resources similar to those of anadromous fish in the ESU, but little information is available on these fish or the role they might play in conserving natural populations of steelhead. The extreme seasonal variation found in watercourses in southern California is likely responsible for the more common occurrence of resident rainbow trout populations in this ESU, i.e., steelhead here may be more likely to become isolated by natural barriers to dispersal because of this seasonality in flow regimes. The NMFS concluded that the status of resident fish upstream from man-made migration barriers must be evaluated on a case-by-case basis as more genetic and life history information becomes available (NMFS, 1996). The NMFS identified two major areas of uncertainty in evaluating the Southern California ESU: a) accurate run size and trend estimates are lacking for natural steelhead stocks in this ESU, and; b) the relationship between resident and anadromous forms of the biological species is unclear.

Steelhead and resident rainbow trout are known from a number of streams along the south coast of Santa Barbara County. Within the project region, Arroyo Hondo appears to support the highest and most consistent numbers of salmonids; however, genetic work has not been done to determine if these fish are the anadromous steelhead or resident rainbow trout. Circumstantial evidence, such as the disappearance of smolts in the lagoon at the mouth of Arroyo Hondo, may indicate salmonids here are anadromous (Cardenas, pers. comm., 2000; Storrrer, pers. comm, 2000). Arroyo Quemado supports perennial flows and may also provide spawning and nursery habitat for steelhead.

Canada de la Pila in seasonally intermittent and apparently does not provide suitable spawning or nursery habitat for salmonids. There are no suitable pools that persist through the dry season on the reach of the drainage between the northern edge of the back canyon downstream to the ocean. Moreover, the large, in-channel concrete drop structure and other in-channel modifications of the drainage made to accommodate the landfill created and maintain barriers to upstream movement of anadromous fish. Consequently, it is unlikely that the proposed expansion project will directly affect this species. Indirect effects may include lowered water quality of nearshore waters where this fish congregates before moving into natal streams caused by increased sediment/pollutant transport during operation of the expanded landfill (Waters, 1995). However, mitigation measures such as improved waste handling methods and construction and maintenance of out-of-channel sedimentation basins may reduce potential impacts from these sources. Indirect impacts also may occur from predation by gulls on fingerling salmonids that may be present in the lagoon at the mouth of Arroyo Hondo and Arroyo Quemado. Large numbers of gulls congregate at these water sources, apparently because of their proximity to the existing landfill.
<table>
<thead>
<tr>
<th>Common Name (Scientific Name)</th>
<th>Status</th>
<th>Regional Distribution and Habitat</th>
<th>Local Distribution and Potential Occurrence in Project Area</th>
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</thead>
<tbody>
<tr>
<td>Tidewater goby (<em>Eucynclogobius newberryi</em>)</td>
<td>FE/SE</td>
<td>Highly disjunct populations restricted to lagoons and lower reaches of coastal streams and rivers from Del Norte County to San Diego County, California (Swift et al., 1989).</td>
<td>Known from coastal streams east and west of project area, including Arroyo Quemado and Arroyo Hondo (Swift et al., 1989, 1993; Ambrose et al., 1993. Unlikely to occur in Canada de la Pila.</td>
</tr>
<tr>
<td>Southern steelhead (<em>Oncorhynchus mykiss</em>)</td>
<td>FE</td>
<td>Sporadic distribution in coastal streams in northwestern Baja California Norte, Mexico and throughout coastal California, Oregon, and Washington (NMFS, 1996).</td>
<td>Resident and apparently anadromous salmonids are known from Arroyo Hondo and other coastal streams along the south coast of Santa Barbara County. Unlikely to occur in Canada de la Pila.</td>
</tr>
<tr>
<td>California red-legged frog (<em>Rana aurora draytonii</em>)</td>
<td>FT</td>
<td>Perennial and intermittent streams, ponds, and lakes in coastal region, Central Valley, and Sierra Nevada foothills; extirpated from most of its former range by habitat alteration and non-native predators (Jennings and Hayes, 1994). Larvae and adults require aquatic and emergent vegetation and dense bank vegetation as microhabitat. Breeds earlier than most amphibians (early to mid-winter), and has an extended larval period.</td>
<td>Occurs in several drainages along south coast of Santa Barbara County, including Canada de la Pila. Found in sedimentation basins in back canyon portion of project area during surveys for this report.</td>
</tr>
<tr>
<td>California brown pelican (<em>Pelecanus occidentalis californicus</em>)</td>
<td>FE/SE</td>
<td>Coastal and nearshore waters, bays, and harbors along southern California coast and Channel Islands; late spring and early summer visitor to south coast of Santa Barbara County (Lehman, 1994).</td>
<td>Regularly observed foraging over nearshore habitats near mouth of Canada de la Pila (Hunt, pers. obs.); roosting status in area unknown.</td>
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<tr>
<td>Species</td>
<td>Status</td>
<td>Distribution/Description</td>
<td>Threats/Notes</td>
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<tr>
<td>American peregrine falcon (Falco peregrinus anatum)</td>
<td>Delisted/SE</td>
<td>Distributed throughout North America along coastlines, in mountainous areas, and in riparian habitats; experience widespread declines and regional extinction by 1970's; recovery plan has been successful; species was proposed for delisting in 1998 (USFWS, 1998a). Breeds and roosts on vertical rock walls and cliffs near food source (birds).</td>
<td>Rare fall and winter visitor to south coast of Santa Barbara County, where it formerly bred. Release of captive pairs to historic nest sites has not yet documented natural breeding. South-facing mountain slopes in project region between Gaviota and Goleta contain excellent roosting and breeding habitat. Probably forages or roosts in project area.</td>
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<tr>
<td>Swainson's hawk (Buteo swainsoni)</td>
<td>ST</td>
<td>Historically one of the most common raptors in California, ranging through most of the non-forested lowlands across the state. It is now considered a very rare spring and fall transient to coastal grassland and riparian woodlands in southern California (Lehman, 1994).</td>
<td>Recent records of single birds sighted over El Capitan State Beach (east of project area) and Arroyo San Agustin (west of project area) (Lehman, 1994; Hunt, pers. obs.). This species may occasionally forage over grasslands in project area.</td>
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<tr>
<td>Bank swallow (Riparia riparia)</td>
<td>ST</td>
<td>Formerly relatively common summer resident to lowland habitats throughout southern California. Now considered a rare migrant (Garrett and Dunn, 1981; Lehman, 1994). Nests in riverbanks, coastal bluffs, or other vertical exposures with friable soils only along Sacramento River and Great Basin regions of California (Laymon et al, 1988).</td>
<td>Expected to occur only as a spring and fall transient to south coast of Santa Barbara County (Lehman, 1994).</td>
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<tr>
<td>Southwestern pond turtle (Clemmys marmorata pallida)</td>
<td>Category 1</td>
<td>Historically occurred along most of the watercourses and upper reaches of estuaries throughout central and southern California, southern Central Valley, and Sierra Nevada foothills. Extirpated from many locations; only 6-8 viable populations remain south of the Santa Clara River, Ventura County. Habitat includes slow-moving or stagnant aquatic habitat with sufficient aquatic basking sites. Requires suitable upland habitat for overwintering and nesting (Holland, 1991; Jennings and Hayes, 1994).</td>
<td>Occurs in several drainages along the south coast of Santa Barbara County, including Arroyo Hondo (west of project area) and Arroyo Quemado (east of project area), likely extirpated from Canada de la Pila due to landfill construction.</td>
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<tr>
<td>Species</td>
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<tr>
<td>Pinnacles Optioservus riffle beetle (Optioservus canus)</td>
<td>Known</td>
<td>Known from swift-moving perennial streams in Pinnacles National Monument, San Benito County, but museum records indicate possibly a much broader range (Arnold, 1998).</td>
<td>Museum record from “vicinity of Santa Barbara” (Arnold, 1998). This species may occur in riffles along upper Canada de la Pila watercourse in project area, apparently no suitable habitat in back or front canyon portions of project area.</td>
</tr>
<tr>
<td>San Francisco lacewing (Nothochrysa Californica)</td>
<td>FSC</td>
<td>Historically distributed in riparian and oak woodlands and scrub habitats from coastal Humboldt County southward to Los Angeles County. Due to habitat alteration, only a few extant populations are known (Arnold, 1998).</td>
<td>Museum record of adults collected at Gaviota Rest Area along Highway 101, three miles from project area. Suitable woodland and scrub habitat for this species occurs in the project area.</td>
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<tr>
<td>Point Conception Jerusalem cricket (Anmopelmatus minuvi)</td>
<td>FSC</td>
<td>Only known from type locality—wind-blown sand dunes around Point Conception lighthouse (Rentz and Weissman, 1981).</td>
<td>No suitable habitat exists for this species in the project area.</td>
</tr>
<tr>
<td>Globose dune beetle (Coelus globosus)</td>
<td>FSC</td>
<td>Restricted to beach and foredune sands, usually associated with shrubs and beach wrack from British Columbia southward to northwestern Baja California Norte, Mexico (Doyen, 1976).</td>
<td>Closest known locality to project area is Haskell’s Beach (CNDDB, 1998; Hunt, pers. obs.). Suitable dune habitat is very restricted around the mouths of Arroyo Quemado and Canada de la Pila, and species may potentially occur there.</td>
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<tr>
<td>Sandy beach tiger beetle (Cicindela hirticollis gravida)</td>
<td>Distributed</td>
<td>Distributed in open, sandy coastal scrub and beach habitats in central and southern California (Nagano, 1982).</td>
<td>This species has been collected in the vicinity of Goleta Beach and Coal Oil Point (Nagano, 1982). Suitable habitat for this species may be found around the mouth of Canada de la Pila.</td>
</tr>
<tr>
<td>Frost’s tiger beetle (Cicindela senilis frosti)</td>
<td>FSC</td>
<td>Only known from coastal salt marsh habitats in central and southern California (Nagano, 1982).</td>
<td>This species has been collected at Goleta Slough in salt marsh habitat (Nagano, 1982). Suitable habitat does not occur in the project area.</td>
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<tr>
<td>Coast horned lizard (Phrynosoma coronatum)</td>
<td>FSC</td>
<td>The northern subspecies, frontale, is distributed in open grassland, coastal sage scrub, chaparral, and riparian scrub habitats from northern Los Angeles County northward to the San Francisco Bay area (Stebbins, 1985). Extirpated from at least 35% of its former range (Jennings and Hayes, 1994).</td>
<td>Local climatic conditions, specifically persistent coastal fogs, may limit the distribution of this species in coastal southern and western Santa Barbara County. Closest known locality is Santa Ynez Peak area. Unlikely to occur in project area.</td>
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<td>Species</td>
<td>Local/Endemic</td>
<td>Description</td>
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<tr>
<td>Two-striped garter snake</td>
<td>FSC</td>
<td>Historically distributed along perennial and intermittent streams and rivers, ponds, and lakes from Monterey Bay southward through Baja California, Mexico (McGuire and Grismer, 1993). In addition to aquatic habitat, this species requires suitable upland overwintering and breeding habitat (Jennings and Hayes, 1994).</td>
<td>Known from several drainages along the south coast of Santa Barbara County, including Gaviota Creek, west of the project area, and Arroyo Quemado, east of the project area. Suitable aquatic and upland habitat occurs along Canada de la Pila in the project area.</td>
</tr>
<tr>
<td>Unnamed walking stick</td>
<td>Local/Endemic</td>
<td>Recently described (1993) and known only from chaparral and oak woodland habitats along south slope of the Santa Ynez Mountains (Sandoval, 1998).</td>
<td>Closest collecting locality is south slope of the Santa Ynez Mountains north of Goleta. Suitable chaparral and oak woodland habitat occurs in the back canyon portion of the project area.</td>
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<tr>
<td>Monarch butterfly</td>
<td>CSC (roosts)</td>
<td>A migratory insect, monarchs from throughout western North America congregate and overwinter at sites in coastal California from Mendocino County southward to northern Baja California Norte, Mexico, where they may form large aggregations of thousands of individuals on particular trees (Arnold, 1998). Formerly roosted in riparian woodlands, now extensively uses mature eucalyptus trees as roost sites.</td>
<td>Large monarch roosts are located along Tajiguas Creek and at the mouth of Arroyo Quemado and Canada de la Pila, east of the project area. Monarchs may forage and breed over grasslands within the project site.</td>
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<tr>
<td>Coast Range newt</td>
<td>CSC</td>
<td>Occurs in perennial coastal drainages, ponds, lakes, and reservoirs, from central Mendocino County southward to San Diego County (Jennings and Hayes, 1994).</td>
<td>Found in several of the drainages along the south coast of Santa Barbara County, including Gaviota Creek, west of the project area, and Gato Creek, east of the project area (Hunt, pers. obs.). The front and back canyon portions of the Canada de la Pila drainage in the project area lack sufficient flow to support breeding newts. Steeper, portions of the watercourse north of the project area may support this species.</td>
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<tr>
<td>Silvery legless lizard (Anniella pulchra pulchra)</td>
<td>CSC</td>
<td>Distributed in loose, sandy soils from coastal to montane areas of California from the San Francisco Bay area southward to northwestern Baja California Norte, Mexico (Hunt, 1983). Extirpated from approximately 20% of this range (Jennings and Hayes, 1994). Occurs in a variety of habitats from coastal sand dune scrub, open coastal sage scrub and chaparral, riparian scrub, and oak woodland, to pine-oak woodland (Hunt, 1997).</td>
<td>The distribution of this species in southern Santa Barbara County is poorly known, with only a few specimens collected from widely scattered locations (e.g., Yriddis Creek; Santa Barbara)(UCSB and SBMNH collections). Presence in the back canyon portions of the project area possible because of presence of suitable, friable soils and vegetation.</td>
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<tr>
<td>Coast patch-nosed snake (Salvadora hexalepis virgulacea)</td>
<td>CSC</td>
<td>This subspecies is found in open grassland, coastal sage scrub, and open chaparral habitats on coastal slopes from northern San Luis Obispo County southward to northwestern Baja California Norte, Mexico (Stebbins, 1985). Its natural history is poorly known, but it appears to be a specialized predator of whiptail lizards (genus Cnemidophorus) (Jennings and Hayes, 1994).</td>
<td>The local distribution of this snake may mirror that of its lizard prey. It appears to be rare along the coastal portions of southern and western Santa Barbara County because of persistent coastal convection fogs. The nearest locality is around San Marcos Pass (Jennings and Hayes, 1994). It is unlikely to be found in the project area, despite the presence of suitable scrub and chaparral habitat in both the front and back canyons.</td>
</tr>
<tr>
<td>Ferruginous hawk (Buteo regalis)</td>
<td>CSC</td>
<td>Found throughout the western United States in grasslands, riparian woodlands, and agricultural fields (Lehman, 1994), although it is declining regionally due to habitat destruction.</td>
<td>Uncommon fall transient and winter visitor to the south coast of Santa Barbara County. It is most commonly observed in the Cuyama Valley and along the Santa Maria River floodplain (Lehman, 1994). Observations near the project area include El Capitan State Beach and Gaviota State Beach. This species probably forages over grassland around the front canyon portion of the landfill.</td>
</tr>
<tr>
<td>Northern harrier (Circus cyaneus)</td>
<td>CSC</td>
<td>Distributed over most of the North America in grasslands and open scrub habitats and freshwater and salt marshes. Regional declines have been attributed to conversion of these habitats by human activities (Lehman, 1994).</td>
<td>An uncommon fall transient and winter visitor to the south coast of Santa Barbara County, including the project region. This species is expected to occasionally forage use grassland and scrub habitats around the front canyon portions of the project area, and may roost along Canada de la Pila.</td>
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<tr>
<td>Species</td>
<td>CSC/Local Concern</td>
<td>Distribution and Ecological Notes</td>
<td>Note</td>
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<tr>
<td>White-tailed kite <em>(Elanus leucus)</em></td>
<td>CSC</td>
<td>Distributed along the Pacific coast from southern Oregon southward to northwestern Baja California Norte, Mexico, and Central Valley of California in grasslands, marshlands, and agricultural areas. Roost and nests in eucalyptus windrows, willow thickets, and riparian woodlands.</td>
<td>Uncommon resident and local summer breeder, more common along the coast in summer and fall (Lehman, 1994). Periodic fluctuations in local densities of kites appear to be tied to similar population fluctuations of their main prey item, voles (<em>Microtus</em>). Kites are regularly seen foraging over coastal grasslands and roosting in large numbers along the south coast of Santa Barbara County. They nest locally in eucalyptus and riparian woodlands (Hunt, pers. obs.). Kites were observed foraging over grassland habitat around the front canyon portion of the project area in 1998 (Hunt, pers. obs.).</td>
</tr>
<tr>
<td>Golden eagle <em>(Aquila chrysaetos)</em></td>
<td>CSC</td>
<td>Occurs over most of southern Canada and the United States, except the southeastern U.S. in mountainous or hilly terrain.</td>
<td>Uncommon resident and local breeder to interior Santa Barbara County (Lehman, 1994). Uncommon to rare along coastal portions of the county, but may occasionally forage in grasslands in the project area.</td>
</tr>
<tr>
<td>Prairie falcon <em>(Falco mexicanus)</em></td>
<td>CSC</td>
<td>Restricted to the western United States in grassland, agricultural areas, sloughs, and river mouths</td>
<td>Uncommon permanent resident in interior of Santa Barbara County; rare transient and winter visitor to the south coast of Santa Barbara County. Expected to occasionally forage over the coastal plain, including grasslands in the project area.</td>
</tr>
<tr>
<td>Merlin <em>(Falco columbarius)</em></td>
<td>CSC</td>
<td>Winter visitor to Pacific Coast states and throughout the southern United States; breeds in Canada. Occurs in a variety of lowland and mountainous habitats.</td>
<td>Uncommon transient and winter visitor to Santa Barbara County; very uncommon along south coast; no records west of Goleta (Lehman, 1994).</td>
</tr>
<tr>
<td>California horned lark <em>(Eremophila alpestris actia)</em></td>
<td>CSC</td>
<td>This subspecies is found in short-grass grassland, mountain meadows, open coastal plains, open agricultural fields, and sand dunes from coastal southern Humboldt County southward to northwestern Baja California Norte, Mexico (Grinnell and Miller, 1944).</td>
<td>Fairly common to common transient and winter visitor and an uncommon to rare local breeder in coastal regions (Lehman, 1994). It has not been recorded as a breeding species between Goleta and Gaviota, but is regularly observed foraging in small flocks in coastal grasslands, including grasslands within the project area (Lehman, 1994; Hunt, pers. obs.).</td>
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<tr>
<td>Loggerhead shrike <em>(Lanius ludovicianus)</em></td>
<td>CSC</td>
<td>Found in open and semi-open habitats, such as semi-desert scrub, grassland, oak savanna, coastal sage scrub, open riparian woodland, and agricultural areas throughout the United States (Remsen, 1978)</td>
<td>Uncommonly observed in coastal grasslands, coastal sage scrub, and chaparral habitats between Goleta and Gaviota, including coastal sage scrub/grassland in the project area (Lehman, 1994; Hunt, pers. obs.).</td>
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<td>Species</td>
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<tr>
<td>Cooper’s hawk (Accipiter cooperi)</td>
<td>CSC</td>
<td>Resident over most of the United States in riparian and oak woodlands.</td>
<td>Uncommon to fairly common transient and winter visitor. Formerly more common in Santa Barbara County, especially along south coast. Observed in riparian woodlands adjacent to project area (Hunt, pers. obs.), and expected to forage and potentially breed in project area.</td>
</tr>
<tr>
<td>Sharp-shinned hawk (Accipiter striatus)</td>
<td>CSC</td>
<td>Discontinuously distributed as a resident species in the United States; winter visitor to semi-open and wooded habitats in most areas, breeds in Canada.</td>
<td>Uncommon to fairly common transient and winter visitor to Santa Barbara County; expected to occur in riparian woodlands in project area.</td>
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<tr>
<td>Tree swallow (Tachycineta bicolor)</td>
<td>CSC</td>
<td>Occurs over much of the United States as a spring and fall transient; breeds in riparian, especially cottonwood-willow, woodlands along watercourses.</td>
<td>Common spring and rare fall transient to Santa Barbara County. Breeds along north coast of County, uncommon to rare along south coast (Lehman, 1994).</td>
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<tr>
<td>Purple martin (Progne subis)</td>
<td>CSC</td>
<td>Spring and summer transient over most of North America in riparian woodlands; nests in holes in sycamore and conifer trees.</td>
<td>Very rare spring and fall transient along south coast of Santa Barbara County, nests on the north slope of the Santa Ynez Mountains; observed mainly in the Santa Ynez Valley and north coast of County (Lehman, 1994). May occasionally forage over project area.</td>
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<tr>
<td>Yellow warbler (Dendroica petechia)</td>
<td>CSC</td>
<td>Occurs over most of the United States in riparian woodland and willow thickets as a spring and summer breeder.</td>
<td>Uncommon to fairly common spring and fall transient to south coast of Santa Barbara County; closest verified breeding record to project area is for Refugio Creek (Lehman, 1994). Observed in several drainages along the south coast (Hunt, pers. obs.), and expected to occur along riparian corridor in project area.</td>
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<tr>
<td>Yellow-breasted chat (Icteria virens)</td>
<td>CSC</td>
<td>Summer resident over most of the United States in dense riparian vegetation.</td>
<td>Rare transient and summer resident along south coast of Santa Barbara County; local breeding records for lower Refugio Creek, Hollister Ranch, and Gaviota Creek (Lehman, 1994); expected to forage in riparian woodlands in project area.</td>
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<tr>
<td>Blue grosbeak (Guiraca caerulea)</td>
<td>CSC</td>
<td>Summer resident over much of the United States in brush and scrub adjacent to riparian corridors; brushy roadsides, and fields.</td>
<td>Rare and local summer resident along south coast of Santa Barbara County; fall transient along coastal plain; local breeding records for Nojoqui Falls area, and Atascadero Creek in Goleta. Expected to forage in brushy grasslands in project area.</td>
</tr>
<tr>
<td>Species</td>
<td>Location/Notes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Spotted bat (Euderma maculata)</strong></td>
<td>Found throughout most of western North America from southern Canada southward through northwestern Mexico (Ingles, 1965; Hall, 1981). Occurs in scrub, deserts, open pine forests, and grasslands with suitable nearby rock outcrops or buildings for roosting (Williams, 1986). One record for the project region comes from the Santa Ynez Valley (Aspen Environmental Services, 1993). Suitable scrub and grassland foraging habitat, as well as rock outcrops for roosting, occurs throughout the project area.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pale big-eared bat (Plecotus townsendii pallescens)</strong></td>
<td>This subspecies has been found in a variety of habitats, including coastal conifer and deciduous forests, oak woodland, arid grasslands, deserts and montane forests and meadows, throughout California (Hall, 1981; Williams, 1986). Suitable habitat appears to contain foraging, roosting, and hibernation sites in relatively close proximity to each other (Williams, 1986). The only record for the south coast of Santa Barbara County comes from Santa Barbara. This species is expected to utilize grassland and oak woodlands in the project region as foraging habitat and rock exposures in and north of the back canyon of Canada de la Pila as potential roosting and hibernation sites.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pallid bat (Antrozous pallidus)</strong></td>
<td>Found in mesic lowlands and canyonlands throughout most of western North America (Ingles, 1965; Hall, 1981). It regularly forages over grassland and scrub habitat where it captures Jerusalem crickets and scorpions (Ross, 1967; Brown, 1980). One or more of the Channel Islands have resident colonies of this species, and there appears to be little or no mixing of mainland and island populations (Brown, 1980). Elsewhere in the project region they have been found in Vandenberg Air Force Base (Collins, 1998), and on the lower Ventura River (Hunt and Lehman, 1992). This species is expected to utilize grassland, scrub, and rock exposures in the project area as foraging and/or roosting habitat.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>San Diego desert woodrat (Neotoma lepida intermedia)</strong></td>
<td>This subspecies is distributed along the coastal slope of the Coast and Transverse Ranges from San Luis Obispo County southward through northwestern Baja California Norte, Mexico (Hall, 1981). It occurs in coastal sage scrub and chaparral habitats on rocky substrates. Several records along the south coast of Santa Barbara County, including Arroyo Hondo and Arroyo Quemado, indicate that this species is widely distributed along the south slope of the Santa Ynez Mountains in this area (Aspen Environmental Services, 1993). Nests of this species were found in rock crevices in the back canyon portions of the project site.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Species</td>
<td>Designation</td>
<td>Habitat</td>
<td>Conservation Status</td>
</tr>
<tr>
<td>---------</td>
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<td>--------------------</td>
</tr>
<tr>
<td>American badger (Taxidea taxus)</td>
<td>CSC</td>
<td>Badgers occur in a variety of semi-arid and arid habitats throughout the western and mid-western United States (Hall, 1981), that support suitable densities of burrowing rodent prey (Williams, 1981).</td>
<td>Historically found in grassland, coastal sage scrub, and chaparral habitats throughout the coastal plain and south slope of the Santa Ynez Mountains between Goleta and Gaviota, now becoming increasingly uncommon. Records bordering the project area include Canada de Guillermo and Arroyo Quemado (Aspen Environmental Services, 1993). Badgers are expected to utilize grassland and scrub habitats around the front and back canyons of the project area as foraging and denning habitat.</td>
</tr>
<tr>
<td>Mountain lion (Felis concolor)</td>
<td>FPF</td>
<td>Historically found throughout North America (Hall, 1981), now largely restricted to western North America. Found in a variety of lowland and mountainous regions.</td>
<td>Relatively common resident of Santa Ynez Mountains. Recent sightings in Gaviota State Park (Aspen Environmental Services, 1993), and Tajiguas and Gato Canyons (Hunt, pers. obs.). This species is expected to occur throughout the project area.</td>
</tr>
<tr>
<td>Ringtail (Bassariscus astutus)</td>
<td>FPF</td>
<td>Secretive, crepuscular and/or nocturnal predator on rodents, although will also eat a variety of plant material. Found throughout western North America where they are found in a variety of habitats from near sea level to mountainous regions (Ingles, 1965; Hall, 1981).</td>
<td>Distribution along south coast of Santa Barbara County is poorly known although they appear to prefer riparian woodlands with adjacent scrub vegetation as foraging habitat and nearby rock exposures for den sites. Observed in Eagle Canyon (Aspen Environmental Services, 1993), and tracks found in Tajiguas and Gato Creeks (Hunt, pers. obs.). Tracks of this species were found in Canada de la Pila during surveys for this report.</td>
</tr>
<tr>
<td>Warbling vireo (Vireo gilvus)</td>
<td>Local Concern</td>
<td>Occurs in riparian woodlands and riparian oak woodlands throughout much of the United States as a spring and summer resident. Regional population declines are attributable to loss of riparian habitat and brood parasitism from brown-headed cowbird (Molothrus ater).</td>
<td>Uncommon to fairly common summer resident to the south coast of Santa Barbara County; local breeding records occur in drainages north of Goleta (e.g., San Jose Creek, Maria Ygnacio Creek); expected to occur in riparian woodlands in back canyon portion of project area.</td>
</tr>
<tr>
<td>Grasshopper sparrow (Ammodramus savannarum)</td>
<td>Local Concern</td>
<td>Discontinuously distributed throughout the U.S. as a winter or summer region, depending on latitude. Found in grassland and scrub habitats, and agricultural fields (Lehman, 1994).</td>
<td>Uncommon and local summer resident; locally found in grassland habitats with widely scattered shrubs or rock outcrops which are used as perch sites (Hunt, pers. obs.). Local breeding records are mostly from foothill regions east of the project area. Expected to occur in grassland and open coastal sage scrub and chaparral habitats in the project area.</td>
</tr>
</tbody>
</table>
Status:

FE = Federally listed as endangered; FT = Federally listed as threatened; SE = State-listed as endangered; ST = State-listed as threatened; Category 1 = Candidate for listing as endangered or threatened; FSC = Federal Species of Concern (former Candidate Category 2 species); CSC = California Species of Special Concern (CDFG); FPF = California Department of Fish and Game CDFG Fully-protected Furbearer; Local Endemic = protected under CEQA statutes; Local Concern = Santa Barbara County Special Concern Species (County of Santa Barbara, 1992).
California red-legged frog (*Rana aurora draytonii*)

**Status:** Threatened

Currently two subspecies of red-legged frog are recognized: the northern red-legged from (*R.a. aurora*), found in coastal drainages in northern California between the San Francisco Bay Area and the Oregon border, and the California red-legged frog, formerly distributed in coastal drainages, Central Valley drainages, and western Sierra Nevada drainages between of the San Francisco Bay area southward to northwestern Baja California Norte, Mexico (Stebbins, 1985). These taxa are morphologically, behaviorally, and probably genetically distinct enough to warrant specific recognition (Jennings and Hayes, 1994). Once the most abundant ranid frog throughout most of lowland California, drain tonii has been extirpated from at least 99% of its former Central Valley and adjacent Sierra Nevada foothill localities, and is known from only four locations between the Santa Clara River, Ventura County southward to the Mexican border. Significant numbers of California red-legged frogs occur only in the relatively small coastal drainages between Point Reyes, Marin County and Santa Barbara, Santa Barbara County (Jennings and Hayes, 1994). Factors responsible for the decline of this species center around habitat alteration for flood control purposes, streamflow regulation due to dam construction, and the introduction and rapid spread of exotic predators, such as the bullfrog (*Rana catesbeiana*), sunfish (*Lepomis*), mosquito fish (*Gambusia affinis*), bass (*Micropterus*), and a host of other species.

California red-legged frogs breed between late November and late April in pond habitats (Jennings and Hayes, 1994; Sweet, pers. comm; Christopher, pers. comm.), but up to mid- to late May in stream habitats (Hunt, pers. obs.). Egg masses containing 2,000 to 6,000 2-3 mm (in diameter) eggs are attached to an emergent vegetation or submerged stick brace (Storer, 1925; Hunt, pers. obs.). Embryos hatch 6-14 days after fertilization and remain as larvae for an extended period of time (4-5 months), to metamorphose between July and September.

Habitat of California red-legged frogs is characterized by dense, shrubby, or emergent riparian vegetation, such as arroyo willow (*Salix lasiolepis*), cattails (*Typha spp.*), and bulrushes (*Scirpus spp.*), associated with deep (> 2 feet), still or slow-moving water (Jennings, 1988; Hayes and Jennings, 1988). An important microhabitat feature appears to be emergent vegetation such as willow boughs or overhanging banks formed by willow or other tree root masses in contact with relatively deep water for predator escape (Hayes and Jennings, 1988; Jennings and Hayes, 1994; Hunt, pers. obs.). Although this species can occur in ephemeral or permanent streams or ponds, population probably cannot be maintained in ephemeral streams in which all surface water disappears. Juvenile frogs appear to favor open, shallow aquatic habitats with dense submergents and overhanging banks or stick masses (Hunt, pers. obs.).

Adult red-legged frogs are highly nocturnal and quite wary (Storer, 1925; Hunt, pers. obs.). In contrast, juveniles are much less wary and are frequently diurnally active. Adult drain tonii do not appear to move large distances from their aquatic habitat, although they are known to make long-distance seasonal movements within their local aquatic and terrestrial habitats. Adult drain tonii move seasonally between the oviposition site and the foraging habitat occupied in spring and summer (Jennings and Hayes, 1994), and other observations indicate that adults move into small mammal burrows or beneath dense leaf litter in riparian thickets well above the stream channel in late autumn (Rathbun et al, 1993; Sweet, 1994). This may be an adaptation common to aquatic amphibians and reptiles that inhabit seasonal drainages that convey high-energy flows during winter storms. Juveniles are frequently found in ephemeral drainages and may represent individuals dispersing from a nearby, more permanent water source (Mullen, 1997).

California red-legged frogs were first found on 10 June 1998 in both the northern and southern in-channel sedimentation basins during surveys conducted for this report (see Photo 5 and Appendix 4). At least eleven adult frogs were observed at that time (three in the northern basin and eight in the southern basin). Eight adult frogs were observed in the southern basin during another night-time survey on 2 July 1998. Three
juvenile frogs were observed in the southern basin on 11 August 1998, indicating that reproduction and metamorphosis are occurring (Appendix 4). Since their discovery at this location in 1998, the basins have been periodically monitored to confirm the presence of this species and frogs have been observed each year in both basins since this time.

The sedimentation ponds were constructed about 1988 to capture sediment-laden runoff conveyed by Canada de la Pila during storm flows. A man-made berm/access road separates the northern and southern ponds, but they are connected by a four-foot diameter culvert that passes through the western edge of this berm. The ponds lie in a nearly vertical-walled canyon, formerly the streambed of Canada de la Pila. The southern pond has an overflow culvert at its southwestern end that conveys storm flows underground through a culvert beneath the main access road, then into the open streambed south of the landfill. The dimensions of open water in the southern basin on 3 August 1998 was approximately 450 feet long by 160 feet wide, with a maximum depth of about 17 feet (Hunt, pers. obs.). Evaporation and percolation had lowered the water level by about 12 inches by 11 August 1998. The maximum storage capacity of this pond, when cleared of sediment, is estimated at to be between 2,000,000 and 3,000,000 gallons (Johnson, 1998). Sedimentation of the southern basin since the last clean-out in Fall, 1997 has reduced the storage capacity of this basin by an unknown amount.

The northern and southern basins were drained in less than 36 hours each May or June between 1988 and 1997. Sediment accumulated in the bottoms of these basins was excavated and used as cover for landfill operations. Rapid draining of these basins stopped in 1997 in favor of using the water for dust control water on the landfill. Between 12,000 and 100,000 gallons of water were pumped from the southern basin each day beginning in June of 1997. This practice emptied the pond by early August in 1997. The accumulated sediment in both basins was allowed to dry, then was excavated in preparation for the next rainy season. The discovery of a breeding population of California red-legged frogs in June 1998 ceased water removal activities from these ponds for several weeks until an interim management plan could be devised (see Hunt, 1998a in Appendix 5). This interim plan, approved by the U.S. Fish and Wildlife Service, remains in effect to date (Appendix 5).

At capacity, the dimensions of open water in the northern basin is approximately 250 feet long x 125 feet wide, with a maximum depth of five to six feet (10 June 1998). Water levels in this basin decrease much faster than in the southern basin; by 11 August 1998 this pond was 18-24 deep. The northern basin continues to be cleared of sediment in August/September of each year, after surface water has evaporated and the substrate is dry.

Repeated draining and sediment removal has prevented development of aquatic and riparian vegetation along the margins of the northern and southern basins. Consequently, red-legged frog habitat is currently limited to small patches of emergent vegetation and overhanging and submerged stick masses along the northern shoreline of the southern basin and the southern shoreline of the northern basin. Adult and post-metamorph frogs were observed along these vegetated portions of the sedimentation basins.

This record of red-legged frogs for Canada de la Pila represents a new locality. California red-legged frogs are known from eleven streams along the south coast of Santa Barbara County between Goleta and Gaviota, including Arroyo Hondo and Arroyo Quemado, west and east, respectively, of the Pila Creek (CNDBDB, 1998; UCSB-Museum of Systematics and Ecology museum records; Aspen Environmental Group, 1993; Hunt, 1996b, 1998b, and Hunt, pers. obs.).

Current landfill operations and the proposed expansion project have significantly impacted red-legged frogs and will continue to impact this species in the future unless the existing in-channel sedimentation basins are left alone. All of the individuals observed in June and July 1998 were large adults, indicating a highly skewed age distribution undoubtedly due to landfill activities that drained the pond and eliminated recruitment by each years' cohort. Recently transformed frogs were observed in August 1998, indicating
breeding occurred earlier in the year. Successful metamorphosis of larvae this year might be attributed to cessation of basin maintenance activities that would have killed larvae in the past (e.g., rapid draining of the basins and sediment removal). Persistence of deep water, especially in the southern basin, since 1998 well into late summer allowed larvae to successfully metamorphose.

An interim management plan, based on recommendations from the U.S. Fish and Wildlife Service and Hunt (1998a), was developed to allow controlled, periodic removal of water from the southern pond for dust control. Pumping on alternate days commenced on 26 August 1998. A long-term management plan, aimed at preserving red-legged frog habitat in the back canyon portion of Canada de la Pila, including the sedimentation basins, will be prepared. In the meantime, the interim plan presented in Appendix 5 of this document remains in effect.

California brown pelican (*Pelecanus occidentalis californicus*)

**Status:** Endangered

The brown pelican is a state-listed (endangered) species. Brown pelicans are strictly coastal, frequently open nearshore waters and protected bays and harbors. Although this species can be considered common year-round, numbers are much lower in the late winter and early spring when many birds are at breeding sites in Mexico. Most individuals occurring in Santa Barbara County nest in Mexico (Lehman, 1994). Brown pelicans suffered significant reproductive failures between the late 1950's and early 1970's due to DDT and DDE pesticide use, which led to its classification as endangered.

Numbers of pelicans observed along the mainland coast build rapidly beginning in late May and early June. This species scatters along the south coast, however larger numbers regularly congregate at several roost sites such as the mouth of the Santa Maria River, Purisima Point on Vandenberg Air Force Base, and the Santa Barbara harbor (Briggs et al, 1983; Chambers Group, Inc., 1986; Lehman, 1994). Smaller roosts occur at secluded beaches near the mouth of streams near the project area, such as Bell Canyon, Arroyo Hondo, Canada de Guillermo (Hunt, pers. obs.; Aspen Environmental Group, 1993). The relative importance of any one roost varies seasonally and annually in relation to pelican densities (Briggs et al, 1983).

Brown pelicans have been observed foraging over the beach nearshore waters adjacent to the mouth of Canada de la Pila (Hunt, pers. obs.), however it is not known if the beach is used for roosting.

Indirect impacts to pelicans foraging may occur because of the large numbers of gulls that congregate in nearshore waters for some distance up and down the coast from the landfill. Gulls frequently harass pelicans and increased numbers of gulls may cause pelicans to abandon these waters as foraging habitat. However, expansion of the landfill is not expected to increase the number of gulls present in the area beyond present levels, so the cumulative impact on pelicans is not expected to increase.

5.2 State-listed and Proposed Species

This section discusses one plant and three wildlife species that are listed as endangered or threatened by the State of California (CDFG, 1996, 2000), but which are not federally-listed (Tables 2 and 3).
American peregrine falcon (Falco peregrinus anatum)
Status: Endangered (State)/Delisted (Federal)

Peregrine falcons are listed by the California Department of Fish and Game as endangered (CDFG, 1996, 1997, 2000). This rare falcon occurs along coastlines, in mountainous areas, and in riparian habitats throughout the western United States and Canada. It nests from northern Canada southward through the western United States and winters south into Mexico and Central America. The widespread, significant decline in peregrine falcons has been attributed to a combination of factors, including reproductive failure due to pesticide (DDT and DDE) contamination and habitat destruction. By 1975, this species no longer bred in the eastern United States, and the population in western North America reached an all-time low of 324 nesting pairs.

The peregrine falcon was formerly much more common in southern California, particularly as a nesting bird. Peregrine falcons were found along most of the coast, on the Channel Islands, and locally inland (Garrett and Dunn, 1981). Along the south coast of Santa Barbara County, falcons have nested historically in Gaviota Pass, San Onofre Canyon, Las Flores Canyon, upper Mission Canyon, and Santa Monica Canyon (Biosystems Analysis, Inc., 1981).

Since the ban on DDT, DDE, and other organochlorine pesticides, as well as implementation of a recovery plan more than 20 years ago, falcons have begun breeding again in many areas throughout California however, DDE-induced eggshell thinning continues to affect individuals that nest in coastal areas of California (Walton, 1990). The recovery plan has been successful in rearing and introducing large numbers of falcons back into historic nest sites to re-establish falcons in the wild (Jurek, 1989). Currently, there are at least 1,593 breeding pairs of peregrine falcons in the United States and Canada, well above the recovery goal of 631 pairs (USFWS, 1998c). Between 1983 and 1988, a total of 15 falcons were released at Gaviota Peak, approximately three air miles northwest of the project area (Linthicum and Walton, 1991). By 1991, the breeding population for California was estimated at 111 pairs. Today small numbers of falcons nest on some of the Channel Islands as well as at several locations in southern San Luis Obispo County. This species has not yet re-colonized historic nest sites, although the Gaviota Peak site has been rated as excellent falcon nesting and foraging habitat (BioSystems Analysis, 1981).

A pair of peregrine falcons were sighted on the north slope of the Santa Ynez Mountains near Alisal Lake in 1986 (URS, 1987), and an average of one or two individuals are observed each year along the south coast, primarily during the fall and late winter (Lehman, 1994; Hunt, pers. obs.). Recent (1982-1996) peregrine falcon sightings from the vicinity of the project area include: Gaviota, the Gaviota Marine Terminal (WESTEC, 1983), Arroyo Hondo, Canada de la Huerta (URS, 1987), Tajiguas Canyon north of Highway 101, near Refugio State Beach, Dos Pueblos Ranch reservoir, and Goleta and Devereux Sloughs (Aspen Environmental Group, 1993). Recent sightings in Arroyo Hondo drainage in Spring, 1999 may indicate breeding at this locality (Storrer, pers. comm., 2000). Peregrine falcons also have been sighted in Canada de la Pila, within and north of the existing landfill site (URS, 1987). The rock outcrops in the back canyon, west and north of the landfill, provide good to excellent roosting and nesting habitat for this species.

The increase in the number of peregrine falcons sighted along the south coast is a measure of the success of the captive breeding and release program, as well as a decline in pesticide levels in the food chain as a result of the pesticide ban. Their status in the project region is changing, and region-wide, the recovery program has been sufficiently successful that the USFWS has delisted the peregrine falcon (USFWS, 1998c). However, it will still remain a State-listed endangered species.

Expansion of the landfill in the front canyon will not increase potential impacts above those already present. Expansion into the back canyon could affect the roosting and foraging patterns of this species due to increased disturbance and constant human presence during the day, leading to possible abandonment of Canada de la Pila canyon as foraging habitat.
The attraction of the landfill to seagulls and crows could directly affect this species through increased nest predation and harassment of adult falcons. Indirect effects could include prey declines (shorebirds and other birds) due to harassment and displacement by large numbers of gulls that routinely roost on the shoreline and nearshore waters adjacent to the landfill.

**Santa Ynez false-lupine (Thermopsis macrophylla var. agnina)**

**Status: Endangered**

This species occurs on the flanks of Santa Ynez Peak (elev. 4,298 feet), approximately nine air miles northeast of the project area (Smith, 1976, 1998). It typically grows at higher elevations than those found in the project area, and therefore is not likely to be affected by the proposed landfill expansion.

**Swainson’s hawk (Buteo swainsoni)**

**Status: Threatened**

Historically, this species’ breeding range encompassed most of the non-forested lowland regions of the state, and it was regarded as one of the most numerous raptors in California, with a state-wide population estimated at between 4,200 and 17,100 pairs. Grinnell and Miller (1944) noted its decline beginning in the early 1940’s. In 1979 only 375 pairs were estimated to breed in the state (Rempel, 1993). Population estimates in 1989 identified about 980 pairs, however, researchers attribute the increase to intensified survey efforts and not to actual population increases. More than 85% of the known nesting locations in the Central Valley are associated with riparian systems in the Sacramento Valley (Rempel, 1993).

Formerly considered a common spring and fall migrant early in this century (Lehman, 1994), today it is considered a very rare spring and fall transient in coastal southern California. Habitat loss, specifically, conversion of riparian woodlands and grassland nesting and foraging habitat to agricultural and residential development, is the primary factor in the decline of this species in California (CDFG, 1988).

Swainson’s hawks are a long-distance migratory species, moving between northeastern Canada and southern South America twice each year. Nest construction and courtship occurs in April. Eggs are laid in early April to early May and the young typically fledge about 43 days following hatching. Large groups of juvenile and adult birds may congregate in certain areas prior to the fall migration (Estep, 1989). Migrant Swainson’s hawks can be found over a wide variety of open country habitats such as grasslands, desert, and open agricultural fields, that have scattered large trees or small groves of trees. Insects, reptiles, birds, and small mammals, form the major part of the diet of this raptor. Roost sites include riparian corridors and agricultural windrows, but they will also roost on the ground if trees are unavailable (Hunt, pers. obs.).

Lehman (1994) records only eighteen county records during the past thirty years. Most of the sightings involve single individuals between Montecito and Goleta, in coastal western Santa Barbara County, and in the Cuyama Valley in the north county. The only sightings near the project area involve single individuals: El Capitan State Beach in March 1986, about 8 air miles east of the landfill site (Lehman, 1994), and over Arroyo San Agustin, about 15 air miles west of the project area in October 1989 (Hunt, pers. obs.).

Swainson’s hawks may occasionally forage over grasslands on coastal terraces south of the landfill. However, neither the front or back canyon expansion configuration is expected to affect this species.

**Bank swallow (Riparia riparia)**

**Status: Threatened**

The bank swallow was formerly a relatively common summer resident in lowland habitats throughout southern California. This species is now considered a rare migrant through Santa Barbara County, and it no
longer breeds anywhere in southern California (Garrett and Dunn, 1981; Lehman, 1994). The only known breeding localities in the state are concentrated along the upper Sacramento River and in the Great Basin region (Laymon et al, 1988).

Nesting habitat consists of vertical coastal bluffs, riverbanks, or other vertical exposures that have fine-textured or sandy soils into which birds can excavate burrows for nesting (CDFG, 1998).

Spring transients are typically seen between mid-April and mid-May; fall transients are typically noted between late August and early October (Lehman, 1994). Recent sightings (no records of breeding) in the vicinity of the project area include: El Capitan State Beach (1959); Goleta (1971); and Tecolote Creek (1990) (Lehman, 1994).

This species is not expected to occur in the project area except as a transient. Consequently, it likely will not be affected by the proposed landfill expansion.

5.3 Federal Candidate and Sensitive Species

This section discusses those species that are being considered as candidates for possible addition to the federal list of threatened or endangered species (USFWS, 1994; 1996), or were former candidate species but are now termed "Federal Sensitive Species" (USFWS, 1996).

Candidate species were classified either as "Category 1", meaning there is, "...substantial information on biological vulnerability and threats to support proposals to list them as endangered or threatened species.", or as "Category 2", meaning that, "...sufficient information now in the possession of the Service indicates that proposing to list as endangered or threatened is possibly appropriate, but for which conclusive data on biological vulnerability and threat are not currently available to support proposed rules." (USFWS, 1994). Most, if not all, of these species are also considered State Species of Special Concern (CDFG, 1996, 2000).

Under revisions instituted in 1996 by the USFWS, only those candidate species formerly classified as "Category 1" will continue to be called "Candidate" species. The Service no longer maintains a list of "Category 2" candidate species. These species do not have official status, but are referred to as "Federal Species of Concern" (FSC) as a term-of-art that describes the entire realm of taxa whose conservation status may be of concern to the USFWS. The Service continues to monitor these Federal Species of Concern regarding the need for listing (USFWS, 1996). Although Candidate and Federal Species of Concern have not yet been proposed for federal listing, they meet the definition of "rare" under Section 15380 (b)(2) of the State CEQA Guidelines, and are included herein as part of the environmental review process for the proposed landfill expansion.

Eight species of plants and nine animal species regarded as either federal Category 1 or Federal Species of Concern were considered for potential impacts arising from the proposed landfill expansion project (Tables 2-4).

No candidate plant species were found during the field surveys. The known range for three of these taxa overlaps the project area, where suitable habitat occurs. These are: Refugio manzanita, late-flowered mariposa lily, and Humboldt lily. If present in Canada de la Pila, these three species would be found in the back canyon and would potentially be affected by the project alternative. Only the late-flowered mariposa lily occupies habitat that would be affected by the proposed project.
Aphanisma (*Aphanisma blitoides*)
Status: FSC/California Native Plant Society (CNPS) List 1B

A species of bluffs and scrub on the immediate coast, in sandy soils, Aphanisma has never been recorded from the Gaviota coastal area (Smith, 1976; SBBG, 1988). It is apparently becoming very rare on the mainland and most extant locations are now known from the Channel Islands. Suitable habitat occurs on the coast south of the project area however, the nearest known locations are Pt. Sal, Santa Barbara County, 45 air miles northwest of the project site, and coastal slopes west of Ventura, 50 miles east of the project site. Neither project alternative would impact this species in the event that it occurs in the region.

Refugio manzanita (*Arctostaphylos refugioensis*)
Status: FSC/Regional Sensitive Species List for the Los Padres National Forest/CNPS List 1B

Refugio manzanita is a local endemic named for the type locality, Canada del Refugio, the apparent center of its distribution. It is confined to sandstone substrates, particularly the Refugio Formation. However, it has also been found occasionally along the sandstone outcrops above Canada del Cojo (Hollister Ranch), and northward toward Lompoc (Smith, 1976). This species has only been recorded from elevations above 2,200 feet (McClelland Engineers, Inc., 1988). This species was not found during the survey, and it appeared that no manzanitas were distributed in Canada de la Pila below 1000 feet in elevation.

No manzanitas would be affected by the proposed front canyon expansion. If Refugio manzanita occurs in the chaparral of the back canyon, it potentially could be affected by expansion of the landfill into the back canyon.

Late-flowered mariposa lily (*Calochortus weedii* var. *vestus*)
Status: FSC/Los Padres National Forest Sensitive Plant List (9/97), CNPS List 1B

This lily grows from a bulb, and prefers rocky soils and relatively dry sites. It occurs on the south face of the Santa Ynez Mountains in the San Marcos Pass area (Smith, 1976). No mariposa lilies were found during the plant surveys, although suitable habitat exists in the back canyon reach of Canada de la Pila. However, since the survey could not cover all of the chaparral area, this species should be regarded as potentially occurring in the canyon.

The proposed landfill expansion project would affect a very small area of potential habitat for this species. Expansion into the back canyon would impact a large area of potential habitat for late-flowered mariposa lily.

Blochman's dudleya (*Dudleya blochmaniae* ssp. *blochmaniae*)
Status: FSC/CNPS List 1B

This small live-forever is a coastal slope species, occurring in heavy, clayey soils, as well as on rock outcrops, and often on serpentine exposures. During the dry season, there is little or no above-ground, living portion of this plant. Flower stalks emanate from underground corms and persist for the duration of the rainy season through early summer, depending on soil moisture. It has not been recorded from the Gaviota coastal area (Smith, 1976). It was not found during field surveys for this project however, the project area includes suitable habitat for this species. The two closest localities encompass the project area: Point Sal/Vandenberg area, Santa Barbara County, 45 miles northwest of the project area, and the Conejo Grade and adjacent west-facing slopes of the Santa Monica Mountains, Ventura County, 90 miles east of the project area.
In the unlikely event that this species does occur in Canada de la Pila, it would not be affected by expansion of the front canyon portion of the landfill; suitable habitat would be affected by expansion into the back canyon.

**Southern tarplant (Hemizonia parryi ssp. australis)**  
**Status:** FSC/CNPS List 1B

A plant of estuarine and vernal wetland margins along the south coast (Skinner and Pavlik, 1994), the southern tarplant reaches the northern limit of its distribution in the Dos Pueblos Canyon area, about 12 miles east of the project site (Rindlaub, pers. obs.). If this species occurs west of this location, it would be found along the coastal bluffs and mouths of the coastal canyons. Consequently, the area that would be affected by the proposed landfill expansion project would not impact this species.

**Ocellated Humboldt lily (Lilium humboldtii ssp. ocellatum)**  
**Status:** FSC/CNPS 1B

Humboldt lilies generally grow in cool, mesic habitats in shaded canyons along the coastal and interior areas of southern and eastern Santa Barbara County (Smith, 1976). While this species was not found during the field surveys, it may occur on suitable sites adjacent to the drainage in the back canyon area. Humboldt lily populations occur along San Onofre Creek, two miles west of the project area (Storrer, 1998).

This species would not be affected by expansion of the landfill in the front canyon. If it occurs in the back canyon reaches of Canada de la Pila Creek, then it could be affected by expansion into this area. Because this plant is a perennial, individuals could be transplanted. A follow-up survey to find and transplant this species should be implemented if the project alternative is selected for landfill expansion.

**Nuttall's scrub oak (Quercus dumosa)**  
**Status:** FSC/Los Padres National Forest Sensitive Plant List (9/97), CNPS List 1B

This coastal scrub oak was recently described from the formerly widespread dumosa species-group. It is restricted to the lower coastal slopes of the mountains in the Santa Barbara area. However, Nuttall's scrub oak does not typically extend as far west as the project area (SBBG, 1988; Skinner and Pavlik, 1994), although it was identified in Las Flores Canyon, about seven air miles east of the project area (URS, 1988). No scrub oaks were found in the project area.

No impacts to this species would result from either project alternative.

**Black-flowered figwort (Scrophularia atrata)**  
**Status:** FSC/CNPS List 1B

The center of distribution for this species is northern Santa Barbara and southern San Luis Obispo counties. However, hybrids with S. californica have been reported from the Gaviota area in the past. This species was not found in the project area during the field surveys. Smith (1976, 1998a) reports it from Coal Oil Point in the Goleta area; however, occurrences along the south coast were termed "controversial" by Chambers Group, Inc. (1986). Howald et al. (1986) indicates that occurrence south and east of Point Conception is uncertain and unlikely. The common and widespread California beeplant (Scrophularia californica), which hybridizes with atrata, was found during the field surveys for this report; however, no hybrid individuals were observed.

The proposed landfill expansion is not expected to impact this species.
Pinnacles Optioservus riffle beetle (*Optioservus canus*)
Status: FSC (former Category 2)

This aquatic beetle (Coleoptera: Elmidae) is best known from the Pinnacles National Monument in San Benito County. At this location, all life stages have been found beneath cobbles and gravel from riffles in Chalone Creek, a clear, swift-water stream (Arnold, 1998). Its geographic distribution is likely much broader, based on other collection localities of adults, such as unidentified localities in Riverside County, and in the "vicinity of Santa Barbara", according to the label on one specimen (Arnold, 1998). Specific water requirements and details of its life cycle are unknown.

Despite the absence of information about most aspects of the natural history of this species, it is unlikely that it occurs in the front or back canyon reaches of Canada de la Pila creek. This watercourse is ephemeral at this location, the bed of the channel contains a sand and silt substrate with only a minor gravel and cobble component, and the streambed gradient is not conducive to extensive riffle formation even when surface water is flowing. It is possible that this species occurs in the steeper, bedrock portions of the watercourse, north (upstream) of the project area. Consequently, the proposed project is not expected to affect this species.

San Francisco lacewing (*Nothochrysa californica*)
Status: FSC (former Category 2)

The geographic distribution of this lacewing (Neuroptera: Chrysopidae), formerly extended from coastal portions of Humboldt County southward to Los Angeles County, where it was associated with riparian and oak woodlands and scrub habitats. Today, because of habitat alteration of these coastal habitats, only a limited number of populations are known to still exist (Arnold, 1998). Records of this species from Santa Barbara County are limited to a single collection from the Gaviota Pass rest area off Highway 101, approximately three air miles west of the project area (Arnold, 1998). Specific details of the natural history of this species are unknown, but adults have been collected on various dates ranging from January through June and are nocturnal. The adults and larvae of related species are predaceous on various small insects.

Based on the proximity of the single known collection record to the project area, as well as the presence of suitable scrub, oak woodland, and riparian woodland habitat in the project area, it must be assumed that this species could potentially occur in suitable habitat on-site. Westward expansion of the existing landfill in the front canyon will remove coastal sage scrub habitat for this species. However this potential impact is thought to be insignificant because of the degraded nature of scrub habitats in the front canyon. Expansion of the landfill into the back canyon would affect this species, if present, because well-developed scrub, woodland, and riparian habitat is present throughout much of the east-facing slopes and Canada de la Pila riparian corridor in the back canyon.

Point Conception Jerusalem cricket (*Ammopelmatus muwu*)
Status: FSC (former Category 2)

This recently described cricket (Orthoptera: Stenopelmatidae) is known from only three specimens collected in coastal sand deposits near the U.S. Coast Guard lighthouse at Point Conception, Santa Barbara County in 1972 (Rentz and Weissman, 1981; Arnold, 1998). This is the second known species in the genus, widely separated from *A. kelsoensis*, which is found in the Mohave Desert sand dunes near Kelso, San Bernardino County. One other stenopelmatine is similarly adapted to sand dunes, *Viscainopelmatus*, found far to the south in the Vizcaino Desert near Guerrero Negro, Baja California, Mexico. The Point Conception Jerusalem cricket has not been found again either at the type locality or elsewhere, despite subsequent collecting (Rentz and Weissman, 1981).
The wind-blown sand deposits found at Point Conception are a disjunct analog of Pleistocene and Holocene aeolian sand sheets developed extensively along the western coast of Santa Barbara County (Hunt, 1993). The south-facing aspect of the coastline in the vicinity of the project area, together with the relatively protected nature of the beach around Arroyo Queulado and Canada de la Pila, is not conducive to persistent wind-blown sand dune formation. Consequently, it is highly unlikely that this species would be affected by the proposed landfill expansion.

**Globose dune beetle (Coelus globosus),**

Sandy beach tiger beetle (*Cicindela hirticollis gravida*), and

Frost's tiger beetle (*Cicindela senilis frosti*)

**Status:** FSC (former Category 2)

The globose dune beetle (Order Coleoptera: Tentyriidae) is a member of a genus containing four other species of beetles inhabiting sand dunes along the Pacific Coast of North America. All of the species are strongly fossorial and are restricted to sand dunes or extremely sandy substrates. The globose dune beetle is distributed, along with a closely-related congener, ciliatus, in coastal dunes from northwestern Baja California Norte, Mexico northward to British Columbia, Canada (Doyen, 1976). Throughout most of its range globosus is narrowly restricted to foredunes immediately bordering the ocean, while ciliatus occurs from the immediate coast up to several kilometers inland. The globose dune beetle is able to withstand immersion of its substrate in sea water for long periods of time (Doyen, 1976). The dependence of globosus on dune sand, together with widespread development and alteration of these types of habitats, especially in southern California, has significantly reduced the size and distribution of populations throughout California.

The sandy beach tiger beetle and Frost's tiger beetle (Order Coleoptera: Cicindelidae) are distributed along coastal regions of central and southern California. The sandy beach tiger beetle occurs in open, sandy coastal scrub and beach habitats, while Frost's tiger beetle is known from salt marsh habitats. Extensive alteration or elimination of these habitats has resulted in increased fragmentation and local extirpation of many populations of both species of beetles.

The closest known locality for the globose dune beetle to the project area is a band of degraded sand dunes east and west of the mouth of Bell Canyon Creek (Haskell's Beach) (CNDDB, 1998; Hunt, pers. obs.), approximately 15 air miles east of the project area. The sandy beach tiger beetle has been collected in the vicinity of Goleta Beach and Coal Oil Point (Nagano, 1982), approximately 20 and 15 air miles southeast of the project area. Frost's tiger beetle has been found in Goleta Slough, approximately 20 air miles east of the project area (Nagano, 1982).

Suitable dune habitat, although degraded, limited in extent, and relatively isolated from other such habitats, occurs along the upper beach around the mouths of Arroyo Queulado and Canada de la Pila. The globose dune beetle and sandy beach tiger beetle, if they occur at this locality, could be indirectly affected by changes in the magnitude and duration of outflows from Canada de la Pila, as proposed to occur in an expanded landfill operation. These changes could potentially reduce sediment transport to the beach area, thereby reducing local beach nourishment and potentially leading to a gradual loss of beach sand from this source. However, the magnitude of the prevailing long-shore sediment transport patterns would likely minimize this effect, as large amounts of sediment are made available for transport in nearshore environments by drainages to the west (Trask, 1952; 1955).

Salt marsh habitat for Frost's tiger beetle is lacking from the vicinity of the project area.
Southwestern pond turtle (*Clemmys marmorata pallida*)

**Status:** Category 1

The western pond turtle, *C. marmorata*, as currently recognized, is divided into two subspecies (*Seeliger, 1945*). The northwestern pond turtle, *C. m. marmorata*, ranges discontinuously from the Sacramento Valley of California northward to Puget Sound, Washington. The southwestern pond turtle is distributed from the vicinity of Monterey Bay, Monterey County, southward through the Coast Ranges to Baja California, Mexico. A broad zone of intergradation between these two subspecies occurs in the Central Valley of California from the San Francisco Bay area southward to the southern San Joaquin Valley (*Seeliger, 1945; Carr, 1952; Stebbins, 1985*). The taxonomic validity of the supposed intergradation between the two subspecies has been questioned by Holland (1991) and Bury and Holland (1994), who state that these geographical units actually may represent three distinct evolutionary units (i.e., species).

Historically, southwestern pond turtles occurred along most of the watercourses and upper reaches of estuaries throughout central and southern California. Today, the primary habitat for this species are small- to medium-sized streams in foothill regions, the upper reaches of larger streams and rivers, agricultural ponds, and modified watercourses, such as canals and reservoirs (*Jennings et al, 1992; Holland, 1991; Hunt, pers. obs.*). Habitat alteration, in the form of flood control projects, groundwater pumping and water diversions for agricultural, residential, and commercial use, alteration of upland habitats adjacent to watercourses used for nesting and overwintering, as well as the introduction of non-native predatory fish and amphibians, have significantly reduced or eliminated many populations throughout its range, including the virtual extirpation of this species from the Central Valley (*Holland, 1991; Rathbun et al, 1991; Jennings and Hayes, 1994*). Recent fieldwork indicates that only 6-8 viable populations of southwestern pond turtles remain south of the Santa Clara River in Ventura County, leading Jennings and Hayes (1994) to consider pond turtles endangered south of this point. In particular, most pond turtle populations examined in this region exhibit an age and size distribution highly skewed towards adults, indicating little or no recruitment is occurring (*Holland, 1991*).

This species, along with the California red-legged frog (see species account above), was petitioned for listing by Jennings et al (1992). Listing of the turtle was denied on the basis that it was not in imminent danger of extinction or likely to become so in the foreseeable future (*USFWS, 1993*). Nonetheless, Jennings and Hayes (1994) consider the southwestern pond turtle to be endangered from the Salinas River south along the coast, and throughout the southern San Joaquin Valley; and threatened in the remainder of California.

Typical pond turtle habitat includes slow-moving or stagnant aquatic habitat that forms pools at least three feet deep and 6 feet in diameter with some type of bank cover, such as vegetation, tree roots, or rip-rap boulders (*Rathbun et al, 1991*). Pond turtles are uncommon in high gradient streams (*Holland, 1991*). A critical habitat feature for adults is suitable aquatic basking sites, such as mats of emergent vegetation, submerged mats of aquatic vegetation, exposed logs, rocks, or mud banks. Hatchlings and juveniles require shallow water habitat with relatively dense submergent or short emergent vegetation in which to forage. Population persistence in suitable habitat also requires adjacent suitable upland habitat for overwintering and nesting. Suitable oviposition sites appear to share the following features: exposed, south-facing slopes, open scrub or open grassland vegetation, and dense soils, which apparently provide the high thermal and low hydric potential required for successful egg development (*Holland, 1991; Rathbun et al, 1992, 1993*). Slopes up to 60 degrees have been used for nesting, but most nests have been found on slopes less than 25 degrees. Mating typically occurs in late April or early May. Females emigrate from the aquatic site to an upland location that have been recorded as far as 1,300 feet from the aquatic site however, most nesting occurs within 600-700 feet of the aquatic site (*Storer, 1930; Holland, 1991; Rathbun et al, 1992; County of Santa Barbara, 1997*). Females may lay more than one clutch in a year (*Rathbun et al, 1993*). Most egg-laying occurs during May and June. The young hatch within about 100 days and apparently overwinter in the nest because hatchling-sized turtles have practically never been observed in an aquatic site during the
Most hatchlings are thought to emerge from the nest and move to aquatic habitats in the spring, where they feed on zooplankton (Holland, 1991). Growth in hatchling and juvenile turtles is rapid however, reproductive maturity requires does not occur until turtles are between 7 and 11 years old (Holland, 1991). This species is long-lived, with a large proportion of adults in a healthy population 20 or more years old (Holland, 1991; Hunt, 1994).

Movements away from water, except to nest, are rare (Bury, 1972; Rathbun et al, 1993) however, movements within a stream course are highly variable and can exceed 1.5 miles (Hunt, 1994).

Most of the drainages along the south coast of Santa Barbara County historically supported southwestern pond turtles, including: Barranca Honda Creek (County of Santa Barbara, 1997); Gaviota Creek (Hunt, pers. obs.); San Onofre Creek (Storrar, 1997); Arroyo Hondo (WESTEC, 1993); Arroyo Quemado (Aspen Environmental Group, 1993); Las Flores Canyon (Dames & Moore, 1993, Aspen Environmental Group, 1993); Las Llagas Canyon (Aspen Environmental Group, 1993); Gato Creek (Hunt, pers. obs.); Dos Pueblos Canyon (Aspen Environmental Group, 1993); Tajiguas Creek (Hunt, pers. obs.); and Eagle Canyon (UCSB-Museum of Systematics and Ecology specimen).

Despite their occurrence in drainages east and west of the project area, southwestern pond turtles were not observed in Canada de la Pila during the field surveys. This watercourse may have supported turtles historically however, development of the landfill in the lower canyon probably removed the highest quality turtle habitat found there. The existing watercourse in the project area does not contain suitable aquatic habitat for this species. The man-made, in-channel sedimentation basins provide excellent foraging and basking habitat for turtles however, aquatic emergent vegetation, required for hatchling and juvenile survival, is absent. The higher-gradient, upper reaches of the watercourse, outside the project area, may contain marginal habitat for turtles. Consequently, the proposed project is not expected to affect this species.

**Coast horned lizard (Phrynosoma coronatum)**

**Status: FSC (Former Category 2)**

This species contains two subspecies, blainvillii (San Diego horned lizard), a southern race, distributed in coastal drainages from Baja California northward to approximately the Santa Barbara/Ventura County line; and frontale (California horned lizard), a northern race, distributed from Ventura and western Los Angeles Counties northward through the Coast Range and western Sierra Nevadan foothills, to the San Francisco Bay area (Stebbins, 1954; 1985). Historically it occurred throughout much of the Central and Sacramento Valleys however, conversion of native scrub, grassland, and open woodland habitats to agriculture, has extirpated most of these populations (Jennings and Hayes, 1994). There appears to be a broad zone of intergradation between these subspecies where their ranges overlap in central and northern Ventura and Los Angeles Counties, although the geographic boundaries of the character states defining frontale and blainvillii and supposed intergrades is not well known (Smith, 1971; Hunt, pers. obs.). For the purposes of this report, horned lizards in Santa Barbara County are assumed to belong to the northern race, frontale.

Jennings and Hayes (1994) state that this taxon should be elevated to Threatened status throughout its range. It has apparently disappeared from at least 35% of its range in central and northern California and most of its range in the Central Valley. Extant populations are becoming increasingly fragmented as development of these regions continues.

Horned lizards are active above-ground between April and October, with activity concentrated in April to June. Preferred habitat includes loose, sandy loam and sandy-gravelly soils supporting scattered shrubs and/or an open canopy, including riparian woodland, riparian scrub, coastal sage scrub, open areas in chaparral, and annual grassland.
In the project region, coast horned lizards tend to be found inland, away from persistent convection fogs that blanket the western and southern coastlines of Santa Barbara County (Hunt, pers. obs.). The closest known locality to the project area is from the vicinity of Refugio Road, near the crest of the Santa Ynez Mountains (USCB-Museum of Systematics and Ecology collection). This location is probably well above the typical fog line. No specimens are known from the coastal terraces of the south coast.

It is unlikely that this species occurs in the front canyon portions of the project area. Suitable sandy soil and coastal sage scrub and riparian scrub habitat occurs in the back canyon portion of the project area however, the species has a greater potential for occurring northward in undisturbed portions of the Canada de la Pila drainage. The proposed project is not expected to affect this species.

Two-striped garter snake (*Thamnophis hammondii*)

**Status:** FSC (former Category 2)

This aquatic snake, formerly considered a subspecies of the western aquatic garter snake, *T. couchii*, is almost exclusively confined to coastal slope drainages from the Monterey Bay southward through Baja California Sur, Mexico (Fitch, 1940; Fitch, 1984; Stebbins, 1985; McGuire and Grismer, 1993). Exceptions to this characterization include several populations from the southeastern slope of the Diablo Range (Alameda County), Santa Catalina Island (Los Angeles County), and several perennial, desert slope streams in San Bernardino, Riverside, and San Diego Counties (Jennings and Hayes, 1994).

Historically this was a relatively common snake of deep, slow-moving, perennial and intermittent small streams possessing rocky or sandy beds bordered by willow thickets or other dense vegetation, as well as stock ponds, reservoirs, and other man-made impoundments if they are bordered by dense emergent vegetation and suitable prey are present (amphibians and fish) (Jennings and Hayes, 1994). The highest densities appear to be associated with arroyos or coastal lagoons with relatively open areas of bare soil, short grass, or large, flat pools with plentiful prey. The exposed areas are used for basking (Rathbun et al, 1991). Today, this snake has disappeared from at least 40% of its historic range, mostly since the mid-1940's, and can only be considered common in eastern San Diego County (Jennings and Hayes, 1994). This decline is attributable to regionwide habitat alteration caused by flood control activities, reservoir construction, livestock grazing, and the introduction of non-native, predatory fish such as bass and sunfish, bullfrogs, and wild pigs, as well as the decline of important prey items such a red-legged frog, foothill yellow-legged frog (*Rana boylii*), and mountain yellow-legged frog (*R. muscosa*) larvae, which are sympatric with this species. These factors have extirpated many populations. Those that remain are reduced in size and further geographically fragmented. -Jennings and Hayes (1994) contend that this snake should be listed as threatened throughout its range.

The life history of this species is poorly known. Juveniles and adults emerge from subterranean hibernacula in the spring, although they are sometimes seen above-ground on warm winter days. Mating occurs in the spring and females bear live young in late summer and early fall (Stebbins, 1985; Jennings and Hayes, 1994). Females likely mate each year, although they can store viable sperm for 4-5 years (Stewart, 1972). By November neonates and adults are no longer active above-ground. Snakes apparently move to upland areas adjacent to a watercourse and hibernate in rodent burrows or under large logs and boulders (Rathbun et al, 1991, 1993). Use of particular habitats is seasonal: streamside habitats are occupied in summer; coastal sage scrub and grassland habitats adjacent to riparian corridors are used in winter (Rathbun et al, 1993).

Two-striped garter snakes occur discontinuously in several of the drainages along the south coast of Santa Barbara County, including Gaviota Creek (UCSB collection); Molino Canyon (Storrer, 1994); Arroyo Quemado (UCSB sighting record); Tajiguis Creek (Hunt, pers. obs.); and Gato Creek (Hunt, pers. obs.). It is expected to occur along most of the perennial watercourses in this area, including the upper reaches of Canada de la Pila Creek. Suitable habitat for this species occurs between Highway 101 and the ocean, and along the back canyon portion of this drainage, including the two sedimentation ponds. The intervening
reaches of Canada de la Pila (i.e., between Highway 101 and the sedimentation ponds), is unsuitable for this species. Consequently landfill expansion in the front canyon is not expected to affect this species. Expansion into the back canyon may affect this species by eliminating suitable upland habitat and increased human presence and traffic into this area.

5.4 State Species of Special Concern

This section discusses species that are recognized by the California Department of Fish and Game and California Native Plant Society (CNPS) as "Species of Special Concern" (CDFG, 1996, 2000; Skinner and Pavlik, 1994), but do not currently receive formal recognition by Federal resource agencies (USFWS, 1996). Plants listed by the California Native Plant Society include rare, threatened, and endangered species. Species on CNPS lists 1 and 2 are defined, respectively, as species that are, "...rare, threatened, or endangered in California, and species that are, "...rare, threatened, or endangered in California, but more common elsewhere". These plant species meet legal listing criteria, and as such, qualify for protection or mitigation under the policies of the California Environmental Quality Act (CEQA). All plants listed by federal and state agencies, as well as federal candidate species, are also on CNPS List 1B. Plants on CNPS List 3 (plants for which more information is needed), and CNPS List 4 ("watch list"), may qualify for CEQA protection, depending on the regional context (Skinner and Pavlik, 1994).

Many of the wildlife species discussed in this section are former Category 2 Federal Candidates, and are rare, and locally or regionally declining. These taxa remain on Federal "watch lists" (USFWS, 1996), and also meet the definition of "rare" taxa under Section 15380 of the State CEQA Guidelines, and therefore qualify for protection and mitigation under this Act.

Coulter's saltbush (*Atriplex coulteri*)
Status: CNPS List 1B

The habitat for this species includes coastal bluffs, coastal scrub, and coastal dunes as well as cismontane woodland on alkaline or clay soils (Skinner and Pavlik, 1994). Extant populations of this species in the Santa Barbara County region are located along the immediate coast or adjacent to estuaries (Ferren, 1998). Smith (1976) suggests that the railroad may have been partly responsible for its spread in Santa Barbara County. Its potential occurrence in the project area could include the outer slopes of Canada de la Pila, south of the landfill. These hillsides were not surveyed for the project because the proposed project will not impact this area.

Davidson's saltscale (*Atriplex serenana var. davidsonii*)
Status: CNPS List 1B

Davidson's saltscale is usually associated with alkaline soils, and typically is found along the immediate coast. It apparently tolerates disturbance, and, like Coulter's saltbush, is thought to have spread in the Santa Barbara region along railroad corridors and probably road cuts (Smith, 1976).

This species was not seen in the project area. It most likely occurs along coastal bluffs, where if present, would not be affected by the project.

Robinson's peppergrass (*Lepidium virginicum var. robinsonii*)
Status: CNPS List 1B

This robust perennial was initially regarded as an introduced species on the Channel Islands. However, Smith (1976) and Hickman (1993) consider it to be native. Its habitat includes chaparral and coastal sage scrub. Previous surveys for oil and gas development in the project area (e.g., ADL, 1984; Aspen...
Environmental Group, 1993), did not found this species. Not known from the mainland, it is unlikely that this species occurs in the project area.

Rayless ragwort (*Senecio aphanactis*)
Status: CNPS List 2

Rayless ragwort is an annual plant that prefers mildly alkaline soils. Known populations occur in coastal sage scrub and cismontane woodland (Skinner and Pavlik, 1994). It could occur in the project area, since it is easily overlooked however, it has not been reported from the area in the past (ADL, 1984; Aspen Environmental Group, 1993).

Given the degree of current disturbance to suitable habitat in the project area, it is very unlikely that this species occurs on the site. No individuals of the very similar *Senecio vulgaris* were found on the project site.

Sonoran maiden fern (*Thelypteris puberula var. sonorensis*)
Status: CNPS List 2

On the south slopes of the Santa Ynez Mountains this fern is found in shaded canyons. It is known from Arroyo Hondo, two miles west of the project site, as well as Tajiguas Canyon, three miles east of Canada de la Pila. It may occur in or near the deep, mesic canyon north of the Vaqueros Sandstone outcrops on the west side of Canada de la Pila Canyon. It may also occur in mesic habitats along this drainage in the back canyon.

A follow-up survey for this species is recommended. In the event that this fern grows in areas that would be impacted by the proposed project, individuals could be salvaged and transplanted.

Bitter gooseberry (*Ribes amarum ssp. hoffmannii*)
Status: CNPS List 3

Hoffmann's bitter gooseberry is endemic to the coastal slopes of the Santa Ynez Mountains from Carpinteria westward to Gaviota Pass and Las Cruces Hot Springs. This range encompasses the project area. It typically is found along streams in cool canyons or on other mesic sites (Smith, 1976). It has been found in Las Flores Canyon, approximately seven air miles east of the project site (Smith, 1976; Dames & Moore, 1993). This species was not encountered during the site survey.

Lateral and vertical expansion of the existing landfill in the front canyon, would not affect this species. This species may occur farther upstream along Canada de la Pila Creek and could be affected by expansion of the landfill into the back canyon. Focused surveys for this species along the upper reaches of the Pila drainage should be conducted. Individuals of this species could be transplanted to another suitable location in the same drainage outside the project area.

Plummer's baccharis (*Baccharis plummerae ssp. plummerae*)
Status: CNPS List 4

Plummer's baccharis is typically associated with the cooler, north-facing slopes vegetated with coastal sage scrub, chaparral, and woodland habitats. It is scattered throughout the Santa Ynez Mountains, inland to the Cuyama Valley, and northward toward San Luis Obispo County (Smith, 1976). Populations of this species have been found in several of the canyons along the Gaviota coast (Rindlaub, pers. obs.).

Plummer's baccharis was located on the western slopes of Canada de la Pila canyon, where it was found under oaks and chaparral shrubs along the access road that crosses this slope. It likely occurs sporadically
throughout the chaparral on the west side of the canyon, particularly on east-facing slopes. Both project alternatives will impact this species. An attempt could be made to salvage and relocate at least some of the existing plants. However, at least one attempt to salvage and immediately transplant this species was unsuccessful. This failure suggests that this species can more successfully be propagated from seed and planted out as seedlings (Rindlaub, pers. obs.).

**Brewer's calandrinia (Calandrinia breweri)**

Status: CNPS List 4

Brewer's calandrinia is an annual wildflower that superficially resembles the common 'red maids' (C. ciliata). Populations of the two species may be mixed. Both occur in grasslands, and in openings in woodland and shrub habitats. Brewer's calandrinia was found in the Gaviota area during surveys for the Las Cruces School water line, approximately 7 miles northwest of the project site (Dames & Moore, 1991).

The proposed project may impact this species. No Calandrinia were seen during the site surveys, but this species may cease flowering relatively early in the season. The back canyon survey may have been too late to locate it however, suitable habitat exists in this area for this species. Consequently, additional surveys for this species should be conducted at an appropriate time of the year.

**Catalina mariposa lily (Calochortus catalinae)**

Status: CNPS List 4

Catalina mariposa lily is a perennial that grows from a bulb. It is found in chaparral, cismontane woodlands, coastal scrub, and valley and foothill grassland habitats. This lily occurs in some of the drainages along the coast near the project site, including Canada de la Huerta, immediately west of Canada de la Pila (Storrer, 1998). It was not seen in suitable habitat in the project area, although it was recorded in the project area during the 1988 survey (Chambers Group, Inc., 1988).

Suitable habitat for this species is located in areas that would be impacted by the proposed project.

This species can be salvaged by digging up the bulbs once flowering is over. It may also be propagated from seed. Salvage of this species should be attempted as part of either project alternative.

**South Coast Range morning glory (Calystegia collina ssp. venusta)**

Status: CNPS List 4

Found in cismontane woodland, chaparral and grasslands, this species tolerates serpentine-derived soils, but also occurs on sedimentary substrates. It has not previously been recorded from the project area. Smith (1976) lists it from locations farther inland and at higher elevations (e.g., the Figueroa Mountain area), where it is associated with serpentine exposures.

South Coast Range morning glory was moved from CNPS List 3 (more information needed) to List 4 in the most recent edition. The editors note that many new occurrences were recorded in the early 1990s (Skinner and Pavlik, 1994).

This species is unlikely to occur in the remaining small areas of native vegetation that would be affected by the front canyon expansion configuration. It would most likely occur in the back canyon.
Saint's daisy (*Erigeron sanctarum*)

Status: CNPS List 4

This perennial herb is most frequently encountered in northern Santa Barbara County, particularly on sandy soils. However, it was collected historically on an open rocky slope on the north side of San Marcos Pass, and the type locality is from the Santa Ynez Mountains near Santa Barbara (Smith, 1976). Saint's daisy may frequently appear following fires.

Although there are no recent records for this species in the Santa Ynez Mountains between Gaviota Pass and Santa Barbara, this area has not burned for many years. Additionally, access to the upper slopes of the range where sandstone outcrops would erode into sandy soils is difficult due to the combination of dense chaparral vegetation and private land ownership. It potentially could occur in openings in chaparral in the back canyon area, particularly around rock outcrops that reduce natural shrub density and shrub size.

Suffrutescent Wallflower (*Erysimum insulare* ssp. *suffructescens*)

Status: CNPS List 4

Another perennial herb that is characteristic of sandy dune soils in northern Santa Barbara County, suffrutescent wallflower has been found in Las Flores Canyon, seven miles east of the project area; and from the Gaviota Pass area, west to Canada del Cojo. The latter sites are two to 16 miles west of the project area (Smith, 1976). Unlike Saint's daisy, this species is found in coastal sage scrub and coastal bluff habitats.

Given the degree of disturbance to coastal sage scrub in the project area, this species is unlikely to occur on the project site.

Western dichondra (*Dichondra occidentalis*)

Status: CNPS List 4

Western dichondra is a perennial herb that potentially occurs in grassland, coastal sage scrub, chaparral, and woodland. Occurrences in Santa Barbara County are from the Channel Islands, as well as Surf and Point Sal on the mainland. The latter localities are 35 and 45 air miles northwest of the project area, respectively (Smith, 1976). Previous surveys for oil and gas projects in the vicinity of the project site have not found western dichondra (ADL, 1984; Aspen Environmental Group, 1993).

Its occurrence in the project area is unlikely, but possible, as this species can be overlooked.

Santa Barbara bedstraw (*Galium clifftonsmithii*)

Status: CNPS List 4

This perennial species occurs under or among shrubs in chaparral and oak woodlands. It may also grow in well-developed coastal sage scrub, or along wooded riparian corridors (Smith, 1976). It is difficult to distinguish from Nuttall's bedstraw (*G. nuttallii*), which was found in 1988 in Canada de la Pila during surveys for an earlier landfill expansion proposal (McClelland Engineers, Inc., 1988).

The proposed front canyon configuration would not affect this species, as little or no chaparral is found in the area covered by the lateral and vertical landfill expansion footprint. This species could occur in the large areas of chaparral and woodland habitats in the back canyon that would be affected by the back canyon configuration.
Southern California black walnut (*Juglans californica* var. *californica*)
Status: CNPS List 4

Santa Barbara County is the northern limit for this riparian tree. Although its range extends into the north County, it is much less common north and west of the City of Santa Barbara. It was not seen in the project area. However, walnut seeds were noted in the area during previous surveys (Chambers Group, Inc., 1986; McClelland Engineers, Inc., 1988). These apparently were regarded as escapes from or remnants of orchard plantings. Any walnut trees that might be removed for the project should be checked to determine whether they are introduced or native.

**Fish's Milkwort (Poligala cornuta var. fishiae)**
Status: CNPS List 4

Fish's milkwort now includes *P. cornuta* var. *pollardii*, distributed along the north-facing slopes of the Santa Ynez Mountains from the north side of Refugio Pass in Paradise Park, northwestern to the Santa Rosa Hills, northward to Junecal Dam, and eastward to Ventura County (Smith, 1976). This plant grows in cool, shaded canyons, often with a woodland canopy. Chambers Group, Inc. (1986) noted that mesic seep habitats in the Vaqueros Formation of the south-facing slopes of the Santa Ynez Mountains between Gaviota and Goleta supported shrubs, ferns and herbs that are characteristically found at higher elevations, or from more northerly locations. Consequently, mesic microhabitats in Canada de la Pila canyon could support this species.

Potential, but unlikely, in the upper, mesic microhabitats along the Canada de la Pila drainage, or on the north face of Vaqueros Sandstone outcrops.

**Hoffmann's sanicle (Sanicula hoffmannii)**
Status: CNPS List 4

This perennial herb is typically associated with mesic coastal sage scrub, chaparral, and oak woodland habitats. Although not reported from previous surveys (ADL, 1984; Chambers Group, Inc., 1988; Aspen Environmental Group, 1993), this species is distributed both east and west of the project area in the Santa Ynez Mountains (Smith 1976). This appears to be a species that grows in older, well-developed shrub and woodland habitats, rather than one that readily appears following soil disturbance.

No suitable habitat for this species remains in the area affected by the front canyon configuration. The degree of disturbance in the sage scrub and oak woodlands in the lower portions of Canada de la Pila canyon indicates that this species is unlikely to persist there. It is very unlikely to occur in areas affected by the back canyon configuration.

"Santa Ynez Mountains" Walking Stick (*Timema cristinae*)
State Status: Local endemic

This aberrant group of walking sticks (Phasmatoptera: Timemidae) is one of 14 known species in the family, which are distributed throughout the State (Arnold, 1998). The species, *cristinae*, was recently (1993) named from initial collections made by Dr. Christina Sandoval on the south-facing slopes of the Santa Ynez Mountains (no common name given). Based on extensive collecting, this species appears to be endemic to this mountain range and is currently known only from populations on north- and south-facing slopes of the Santa Ynez Mountains between Ojai and Gaviota. Its habitat is affinities include chaparral and oak woodland vegetation, specifically toyon (*Heteromeles arbutifolia*), mountain mahogany (*Cercocarpus betuloides*), and chamise (*Adenostoma fasciculatum*), as well as coast live oak (*Quercus agrifolia*) associated with this type of chaparral (Sandoval, 1998).
Known populations occur in chaparral vegetation on both sides of Canada de la Pila. Suitable habitat occurs throughout the west-, south, and east-facing slopes of the back canyon portion of the Canada de la Pila canyon, and this species is expected to occur in chaparral and oak woodland habitats in the back canyon portion of the project area. It would not be impacted by the front canyon configuration, but could be significantly impacted by the back canyon configuration.

Monarch butterfly (Danais plexippus)
Status: State Species of Special Concern (overwintering sites)

This butterfly (Lepidoptera: Danaidae) is one of the better known insects because of its annual migration. In California, monarchs from throughout western North America congregate and overwinter at sites south of Mendocino County usually along the immediate coast (Arnold, 1998). Tall trees, including introduced species such as eucalyptus (Eucalyptus), are preferred for overwintering roosts. These sites are usually somewhat sheltered, frequently have a southern aspect, and are located near nectar plants that bloom in the winter. The larvae feed on various species of milkweed (Asclepias).

At least a few dozen roosting sites are located along the south coast of Santa Barbara County (Nagano and Lane, 1985; Calvert, 1991), but every site is not used annually for overwintering. Several coastal drainages in the vicinity of the project site contain monarch butterfly roosting trees, including: Gaviota State Beach, Arroyo del Cementerio, Canada Alcatraz, Arroyo Quemado, between Arroyo Quemado and Tajiguas Creek, Tajiguas Creek, Gato Creek, and several other localities west and east of this area (Calvert, 1991). Eucalyptus woodlands found along the middle and lower portions of these drainages provide overwinter/roosting habitat for monarch butterflies. The Tajiguas Creek roost, together with the Arroyo Quemado roost to the west and Gato Creek roost to the east, is an important component in the regional distribution of this species (Nagano and Lane, 1985; Calvert, 1991). Based on the known distribution of butterfly roosts, especially the close proximity of the large Arroyo Quemado roost, it is likely that monarchs also roost in eucalyptus trees around the mouth of Canada de la Pila.

Neither the front or back canyon configurations would directly affect monarch roosting habitat because of the absence of large trees in the front canyon. However, lateral expansion of the landfill into the ruderal and grassland areas east and west of the existing landfill and in the back canyon may remove larval food plants such as milkweed, as well as adult nectar sources. Large trees such as sycamore and coast live oak occur along the back canyon portions of Canada de la Pila; however, the relatively exposed nature of this riparian corridor, together with the absence of eucalyptus trees preferred for roosting, makes it unlikely that significant aggregations of butterflies use the canyon as overwintering (roosting) habitat. Regardless of the expansion scenario, proposed improvements to the Highway 101 intersection could remove trees used by monarchs or otherwise disturb dispersal and roosting activities leading to increased adult mortality. The road improvements should be timed to occur between May and October, to minimize impacts to dispersing and overwintering butterflies.

Coast Range newt (Taricha torosa torosa)
Status: State Species of Special Concern (south of Salinas River in Monterey County)

This species was historically distributed in coastal drainages from the vicinity of central Mendocino southward to San Diego County from sea level to about 6,000 feet in elevation (Jennings and Hayes, 1994). The subspecies, torosa, occurs from the vicinity of Monterey southward to San Diego County. Populations of this subspecies have been reduced or extirpated by large-scale commercial exploitation, coupled with loss or degradation of stream habitats, especially in Los Angeles, Orange, Riverside, and San Diego Counties.

This species frequents terrestrial habitats, but breeds in ponds, reservoirs, and clear, relatively cold, slow-moving streams (Storer, 1925; Stebbins, 1951). Habitat affinities are not well-known but it is typically found in riparian woodland along the south coast drainage (Hunt, pers. obs.). Breeding occurs in two waves,
the first in January or February and the second in March or April and in coastal streams typically occurs in deep scour pools or other deep-water habitats (Stebbins, 1951). Larvae require between three and six months to reach metamorphosis. Adults are probably long-lived (> 20 years) and may not reproduce every year (Jennings and Hayes, 1994).

Coast Range newts are found in several of the permanent coastal streams that drain the south-facing slopes of the Santa Ynez Mountains in Santa Barbara County, including: some Bixby Ranch and Hollister Ranch drainages and Gaviota Creek, west of the project area, as well as Gato Creek, and several other drainages east of the project area (Sweet, pers. comm.; Jennings and Hayes, 1994; Hunt, pers. obs.). Populations in these drainages are uncharacteristically small, apparently naturally numbering between 50 to 100 individuals (Jennings and Hayes, 1994; Hunt, pers. obs.).

Most of the back canyon and all of the front canyon reaches of Canada de la Pila lack sufficient flow, even during the winter, to support newts. Breeding habitat, in the form of deep scour pools, is also absent. Consequently, this species is not expected to be affected by the front canyon configuration. Newts may occur in Canada de la Pila at the northern end of the back canyon and upstream from this area. The back canyon configuration could affect individuals dispersing downstream from upstream breeding sites.

Silvery legless lizard (Anniella pulchra pulchra)
Status: Species of Special Concern

This is the only limbless lizard found in western North America and is practically endemic to California, ranging from the San Francisco Bay area southward through the Coast Ranges and Sierra Nevada foothills to the coastal slope of northwestern Baja California Norte, Mexico (Stebbins, 1985). As currently recognized, A. pulchra, contains two subspecies: A. p. nigra, a melanistic form restricted to coastal dune sheets around Monterey Bay recently proposed, but denied, for listing as endangered (USFWS, 1998d), and, A.p. pulchra, a wide-ranging subspecies.

It is a habitat generalist but a microhabitat specialist. It occurs in a range of habitats from coastal dunes to montane pine-oak woodland, where it typically is found beneath leaf litter under shrubs and trees. All of these habitats and microhabitats must possess the common feature of occurring on loose soils containing a significant sand fraction (Hunt, 1983; 1997). Because of these morphological and ecological requirements, dispersal ability and the home ranges of individual lizards is typically very small, encompassing a single shrub or limited area beneath trees (Hunt, 1996a). Because of the naturally highly mosaic nature of soil texture and density, populations of legless lizards are naturally highly fragmented (Hunt, 1996a; 1997).

Jennings and Hayes (1994) estimate that approximately 20% of the historic range of this lizard has been converted to unsuitable habitat, and they consider it to be a Species of Special Concern. Factors include urbanization, agriculture, coastal dune development, and the introduction of introduced plants such as veldt grass (Ehrharta calycina), ice plant (Carpobrotus edulis and related species), eucalyptus (Eucalyptus spp.) and other invasive species which displace native vegetation and create unsustainable microhabitat conditions for this lizard (Hunt, pers. obs.). Anniella pulchra bears from one to four (typically one) live young between September and November (Miller, 1944; Goldberg and Miller, 1985). Reproductive maturity is reached in two to three years and a given female may not breed each year (Goldberg and Miller, 1985). This species is long-lived, mature adults having been kept in captivity for over six years (Hunt, pers. obs.).

Only a dozen or so specimens from widely scattered localities are known from the vicinity of the project area, so its distribution in the Santa Ynez Mountains in general, and the south coast in particular, is poorly known. The closest known localities for this species in the vicinity of the project area is Yrdisis Creek (tributary of El Jaro Creek, Tequepis Canyon on the north-facing slope above Lake Cachuma, More Mesa (Goleta), and several specimens from the Hope Ranch area of Santa Barbara (UCSB Mus. Systematics and Ecology and Santa Barbara Mus. Nat. History specimens). Soils derived from the Rincon Shale Formation,
predominant in the front canyon portion of the landfill site, contain too much clay and silt to allow Anniella to burrow in them. The Vaqueros and Monterey Sandstone Formations in the back canyon and northward, do produce suitable edaphic and vegetative conditions for Anniella, and this species, if present, would be found on these substrates. Consequently, the front canyon configuration would not affect this species. The back canyon configuration may potentially affect this species, especially removal of coastal sage scrub and chaparral habitat on sandy soils derived from Vaqueros Sandstone.

Coast patch-nosed snake (*Salvadora hexalepis virgulea*)

**Status:** Species of Special Concern

This widespread species is distributed across a broad range of scrub and arid habitat in the southwestern United States and northwestern Mexico, and exhibits striking geographic variation concordant with the distribution of climatic regions such as the Mojave Desert, Colorado Desert, Great Basin Desert, Central Valley, Coast Ranges, etc. (Stebbins, 1985). The subspecies, *virgulea*, is almost exclusively a coastal slope species, and ranges from northern San Luis Obispo County southward through the Coast and Transverse Ranges into northwestern Baja California Norte, Mexico (Stebbins, 1985; Jennings and Hayes, 1994).

Conversion of coastal grassland and coastal sage scrub throughout southern California, has been implicated in the minimum 20% rangewide loss of populations of this species throughout its range. Jennings and Hayes (1994) consider this taxon as a Species of Special Concern.

The natural history of this taxon is poorly known. It is seasonally active above ground between March and October, during which it exhibits an apparent bimodal diurnal pattern of activity, based on observations of foraging individuals early to late morning, then again in late afternoon (Hunt, pers. obs.). Juveniles are often sighted above ground during winter warm spells. Small mammal burrows, rock crevices, and woodrat nests are typical overwintering sites. Whiptail lizards (*Cnemidophorus*) appear to be primary dietary items (Jennings and Hayes, 1994).

This species is typically found on sandy or rocky substrates vegetated with shrubby grassland, coastal sage scrub, and coastal chaparral. The shrub component required for presence of this species is apparently related to the preferred habitat of its main prey, whiptail lizards (Jennings and Hayes, 1994).

Records for the project region are few, and appear to be concentrated in the interior portions of the County. This distribution pattern mimics that of its main dietary item, *Cnemidophorus*, and may reflect both species' absence from coastal areas of Santa Barbara County that receive persistent convection fog (Hunt, pers. obs.; also see coast horned lizard species account). The nearest locality records shown by Jennings and Hayes (1994) are well east of the project site: the crest of the Santa Ynez Mountains near San Marcos Pass. However, its presence must be considered because of the lack of knowledge concerning the distribution and ecology of this species and the presence of apparently suitable habitat throughout the south slope of the Santa Ynez Range along coastal Santa Barbara County. At least 5% of the front canyon portion of the project site is vegetated with coastal sage scrub and extensive stands of Ceanothus megacarpus-chaparral occur in the back canyon (Fig. 5; Table 1), and northward on adjacent Los Padres National Forest lands. The front canyon configuration is not expected to affect this species because of the relatively degraded condition of the coastal sage scrub in this part of the landfill. The back canyon configuration would remove scrub habitat potentially used by patch-nosed snakes.

**Ferruginous hawk (*Buteo regalis*)**

**Status:** State Species of Special Concern

This species occurs throughout the United States west of the Great Plains. It is considered an uncommon fall transient and winter visitor to California, where it is typically observed in coastal and interior grasslands, riparian woodlands, and agricultural fields in Santa Barbara County. It does not nest in California. It is
most commonly observed in the Cuyama Valley and Santa Maria floodplain (Lehman, 1994). There have been less than 34 sightings of this species along the coastal plain between Carpinteria and Gaviota since 1961 (Lehman, 1994). Urban and agricultural development of wintering habitat used by this species has been implicated in their regionwide decline.

Ferruginous hawks have been observed during the fall and winter months at El Capitan State Beach, Refugio State Beach, and Gaviota State Beach. This species likely uses coastal grasslands adjacent to the existing landfill as foraging habitat in the fall and winter. Consequently, the front canyon configuration could potentially affect this species through loss of grassland foraging habitat. The back canyon configuration is not expected to affect ferruginous hawks because of the absence of suitable grassland foraging habitat in the back canyon portions of the landfill.

Raptors inhabiting grassland and scrub habitats. The following birds are hawks, eagles, and falcons that extensively utilize grassland, coastal sage scrub, and open chaparral as foraging habitats in the project region: northern harrier (Circus cyaneus), white-tailed kite (Elanus leucurus), golden eagle (Aquila chrysaetos), prairie falcon (Falco mexicanus), and merlin (Falco columbarius). All of these species are considered State Species of Special Concern. Roosting and nesting habitat typically includes riparian woodlands and stands of mature eucalyptus. Each of these species have been observed along the south coast of Santa Barbara County between Goleta and Gaviota (Lehman, 1994), and the white-tailed kite was sighted within the project area during field surveys for this report (Hunt, pers. obs.). Only the white-tailed kite is known to breed along the south coast (Lehman, 1994). The other species forage in grassland, open scrub, and shoreline habitats in the project region. Species such as the golden eagle, prairie falcon, and merlin forage in these habitats from cliffside roost sites on rock exposures along the foothills and upper portions of the south slope of the Santa Ynez Mountains (Lehman, 1994; Hunt, pers. obs.).

The front and back canyon expansion configurations could have a common potential effect on these species: loss of suitable grassland and scrub habitat, loss or disturbance to roost sites, causing site abandonment; increased human presence and noise which could result in avoidance of the back canyon area as foraging and roosting habitat.

**California horned lark (Eremophila alpestris actia)**

**Status:** State Species of Special Concern

This subspecies is the coastal counterpart of seven other subspecies of horned larks in California. The subspecies actia, is distributed from coastal southern Humboldt County southward through the Central Valley and Coast Ranges in northwestern Baja California Norte, Mexico (Grinnell and Miller, 1944).

Horned larks are found in open country with sparse vegetation. Typical habitat for this species include level or rolling short-grass grassland, mountain meadows, open coastal plains, fallow grain fields, dirt fields, and sand dunes (Grinnell and Miller, 1944; Lehman, 1994). In Santa Barbara County, Lehman (1994), considers this species to be a fairly common to common transient and winter visitor and uncommon to rare local breeder in coastal regions. Horned larks are much more common during the winter, largely because of invasions by large numbers of birds of other subspecies from interior California (Garrett and Dunn, 1981). Large-scale conversion of suitable grassland habitats is a primary factor in the regional and local declines experienced by this species in the past 50 years.

Horned larks nest on the ground from March through July. They feed on a variety of insects, snails, spiders, grass and forb seeds, and other plant material, and forage on the ground (Ehrlich et al, 1988).

Although this species has not been recorded as a breeder between Goleta and Gaviota, it is regularly observed foraging and roosting in on coastal terraces in this area. The front and back canyon expansion
configurations would remove grassland habitat potentially used by this species as foraging and roosting habitat.

**Loggerhead shrike (Lanius ludovicianus)**

**Status:** State Species of Special Concern

Loggerhead shrikes range throughout the southern half of the United States as permanent residents, and northward into southern Canada as spring and early summer breeders. They frequent a variety of open and semi-open habitats including semi-desert scrub, grassland, oak savanna, coastal sage scrub, open riparian woodland, and agricultural areas (Remsen, 1978; National Geographic Society, 1983). It is an uncommon to rare breeding species along the south Coast of Santa Barbara County (Lehman, 1994).

Loggerhead shrikes have been observed in coastal grasslands, coastal sage scrub, and chaparral habitats at several locations between Goleta and Gaviota: the project area during field surveys for this report, Gaviota area and Gato Creek (Aspen Environmental Group, 1993); Tajiguas Creek and scrub west of Tecolote Creek (Hunt, pers. obs.).

The front and back canyon expansion configurations have the potential to affect this species through loss of grassland and scrub foraging, and possibly breeding, habitat.

Riparian bird species. The following birds are obligate or facultative riparian species whose foraging habitat closely linked to riparian woodland, riparian scrub, and adjacent upland habitats: Cooper’s hawk (Accipiter cooperi), sharp-shinned hawk (A. striatus), tree swallow (Tachycineta bicolor), purple martin (Progne subis), yellow warbler (Dendroica petechia), yellow-breasted chat (Icteria virens), and blue grosbeak (Guiraca caerulea). See also the species account for warbling vireo (Vireo gilvus), below. Each of these species has experienced significant regional and local declines as riparian habitats have been modified by flood control activities, urbanization. In addition to these factors, population declines in the yellow warbler and yellow-breasted chat have been linked to the spread of the brown-headed cowbird (Molothrus ater), a nest parasite often associated with livestock; while in the case of tree swallows and purple martin, competition from the introduced European starling (Sturnus vulgaris) for tree-hole nest sites, has been implicated in their demise. Consequently, all are considered State Species of Special Concern.

Each of these species formerly or currently is known to breed in the project region, and still occur along the south coast of Santa Barbara County between Goleta and Gaviota as either migratory transients or fall and winter visitors (sharp-shinned hawk, purple martin, and tree swallow), migratory breeders (yellow warbler, yellow-breasted chat, and blue grosbeak), or residents (Cooper’s hawk) (Lehman, 1994). The front canyon configuration is not expected to impact any of these species, except blue grosbeak. The back canyon expansion configuration could potentially affect all of these species through habitat loss, and increased noise and human presence in the back canyon portion of the project area.

The front canyon configuration could potentially affect blue grosbeaks through loss of ruderal and scrub grassland breeding and foraging habitat. The back canyon configuration could potentially affect the other species, including blue grosbeaks, through loss of upland scrub habitat adjacent to the Canada de la Pila riparian corridor and increased human presence in this area.

**Spotted bat (Euderma maculata)**

**Status:** State Species of Special Concern

This bat is distributed throughout most of western North America from southern Canada through northwest Mexico (Ingles, 1965; Hall, 1981). Williams (1986) found no evidence that spotted bats are threatened in California, however even basic information on their distribution and ecology is lacking. In California they have been observed at widely scattered locations throughout the state (Williams, 1986). Suitable habitat
appears to include scrub and deserts, open pine forests in rough, rocky terrain, and grasslands. Spotted bats appear to roost mainly in rock crevices, but have also been found roosting in caves and buildings. Females appear to favor ponderosa pine forest as habitat during the reproductive season (Williams, 1986).

Apparently, only one sighting specimen record for this species is known from the project region. Two spotted bats were observed in Happy Canyon near Santa Ynez (Aspen Environmental Group, 1993). The potential impacts of the project on this species must be considered because its known habitat relationships, its dispersal ability, and the presence of suitable foraging habitat (grassland and coastal sage scrub) and roosting habitat (rock crevices and caves in cliff faces) in the project site, contribute to its potential occurrence in the project area. The front canyon configuration would remove suitable grassland and coastal sage scrub habitat. The back canyon configuration would disturb greater amounts of habitat as well as result in increased human presence in the back canyon.

**Pale big-eared bat (Plecotus townsendii pallescens)**
**Status: State Species of Special Concern**

The species, townsendii, contains two subspecies: *P. t. townsendii* is distributed along coastal habitats in northern and central California; *P. t. pallescens* occurs throughout the remainder of the State (Hall, 1981; Williams, 1986). However, the morphological and genetic characterization of these subspecies is based on small sample sizes from widely scattered localities, and consequently is poorly defined and the subject of current study (Collins, 1998). Both subspecies apparently occur in Santa Barbara County (Aspen Environmental Services, 1993).

This species has been found in a wide range of habitats, including coastal conifer and deciduous forests, oak woodland, arid grasslands, deserts, and montane forests and meadows (Williams, 1986), where it feeds primarily on moths (especially microlepidopterans) and other insects (Ross, 1967). It is apparently most common in mesic sites. Roost sites include caves, mine tunnels, buildings, and other man-made structures. Suitable habitat must apparently include appropriate roosting, maternity, and hibernacula sites free from human disturbance. Females typically roost in large maternity colonies which are highly susceptible to human disturbance (Williams, 1986). Pierson (1988) suggest that the decline of this species in California is due primarily to human disturbance of their roost sites.

This species feeds primarily on moths and other soft-bodied insects which are captured in flight or on foliage. They forage over a wide area, up to 20 miles of their roosts. This species hibernates within the region singly or in small clusters from October to April. This species shows high roost site fidelity (Handley, 1959; Pierson, 1988).

A large colony of *P. townsendii* (subspecies unknown), consisting of over 100 individuals, is currently known to roost beneath the old Highway 154 bridge over the Santa Ynez River (Collins, 1998), and this species has been collected in Santa Barbara (Monte Vista Elementary School) in the 1980's (SBMNH specimen). It is expected to occur in the vicinity of the project area. The front canyon configuration would remove potential grassland and scrub foraging habitat for this species. The back canyon configuration would increase human presence and noise levels in the back canyon, potentially leading to abandonment of roost sites, if they occur there.

**Pallid bat (Antrozous pallidus)**
**Status: State Species of Special Concern**

Pallid bats are distributed throughout much of the western North America in mesic lowlands and canyonlands (Ingles, 1965). In the project region, pallid bats are known from coastal grasslands and scrub habitats both on the mainland and Channel Islands (Brown, 1980). It is known to roost in rock crevices and buildings. This species feeds on a wide variety of flying and ground-dwelling insects and arachnids,
including orthopterans, beetles, moths, scorpions, and Jerusalem crickets (Stenopalmatus) (Ross, 1967; Brown, 1980).

The nearest confirmed occurrences of pallid bats in the project region are from the lower Ventura River in 1991 (Hunt and Lehman, 1992), the old Highway 154 bridge over San Antonio Creek in the late 1980's and early 1990's (Collins, 1998), and Vandenberg Air Force Base in 1997 and 1998 (Collins, 1998). The project area contains suitable foraging and roosting habitat for this species. Consequently, both the front and back canyon expansion configurations could potentially affect this species through habitat loss and increased human presence near potential roost sites.

San Diego desert woodrat (Neotoma lepida intermedia)
Status: State Species of Special Concern

This species is widespread throughout arid and semi-arid regions of the southwestern United States. The subspecies intermedia, is distributed along the coastal slope of the Coast Ranges from San Luis Obispo County southward through northwestern Baja California Norte, Mexico (Hall, 1981). Historically, this subspecies occurred throughout southern California in coastal sage scrub and chaparral habitats. Urbanization and agricultural development of these habitats has led to extirpation of many populations and increased fragmentation and isolation of those that remain.

Preferred habitat includes coastal sage scrub and chaparral associated with rock outcrops or patches of prickly pear cactus (Opuntia), where they construct relatively small stick nests in rock crevices, talus, or other cover objects. They are primarily nocturnal and are active all year. They have a distinct breeding season (October through May). They generally restrict their movements to the vicinity of their nests (Bleich and Schwartz, 1975).

In the project region, San Diego desert woodrats have been found throughout the coastal slope of the Santa Ynez Mountains, including Canada San Onofre near the mouth of Refugio Creek, Canada de las Zorritas, Canada del Molino, Canada de Guillermo, Arroyo Hondo, Arroyo Quemado, Canada del Venadito, Las Llagas Creek, and Gato Creek. Many of these records were found along the Union Pacific railroad tracks during field surveys for a proposed route of the Pacific Pipeline Project (Aspen Environmental Group, 1992). Desert woodrat nests were found in rock crevices along the exposed east- and south-facing slopes of the back canyon portion of the landfill during field surveys for this report.

The front canyon expansion configuration would remove chaparral habitat on rocky ground that may be occupied by this species. The back canyon configuration will remove nests and foraging habitat for this species.

American badger (Taxidea taxus)
Status: State Species of Special Concern

Badgers are distributed throughout the western and mid-western United States and from Canada southward to Mexico (Hall, 1981). In California they historically occurred over most of the arid and semi-arid portions of the State (Ingles, 1965). Badger populations have declined drastically in California since the early 1900's, especially in the Central Valley where they were once considered numerous, but are now restricted to grassland and scrub habitats around the periphery of the valley by agricultural conversion of habitat (Grinnell, 1937). Populations have been eliminated from much of the Coast Range and throughout most of the coastal plain of southern California due to poisoning, trapping, and shooting on grazing lands, agricultural development, and urbanization (Williams, 1986).

A diversity of habitats are occupied by this species, including grasslands, savannas, mountain meadows, coastal sage scrub, and riparian scrub (Williams, 1986; Hunt, pers. obs.). A common feature of these
habitats is friable soils and a high density of burrowing rodents such as gophers (*Thomomys*), kangaroo rats (*Dipodomys*), and ground squirrels (*Spermophilus, Ammospermophilus*), and marmots (*Marmota*). They also eat a variety of other animals, including mice, reptiles, birds, eggs, bees, and grasshoppers.

Badgers were formerly relatively common in coastal grasslands between Goleta and Gaviota (Hunt, pers. obs.), but declined noticeably in the 1980's and 1990's (Hunt, pers. obs.). Records for the area include Canada de Guillermo (Aspen Environmental Group, 1993); Arroyo Quemado (Highway 101 road kill); Canada del Venadito (Aspen Environmental Group, 1993); Gato Canyon (SBMNH collection); and Highway 101 between Haskell's Beach and Rancho Dos Pueblos (Hunt, pers. obs). The front and back canyon configurations may potentially affect this species through loss of grassland and associated scrub habitat.

**Mountain lion (*Felis concolor*)**  
**Status:** California Fish and Game fully-protected fur-bearing species

The mountain lion has one of the most extensive geographic distributions of any mammal (Hall, 1981), occurring in grassland, scrub, and coniferous and deciduous woodland habitats. Habitat loss, direct mortality from hunting and motor vehicle collisions, and regional declines in large prey (e.g. black-tailed deer), may be important factors contributing to regional population declines in this species.

Mountain lions occur in a wide range of habitats but appear to reach their highest densities in rocky, open woodland and scrub habitats. The Santa Ynez Mountains contains some of the highest densities of mountain lions in southern California. The home range of both males and females is very large (hundreds of square miles) however, females with young have much smaller home ranges. Reproductive maturity is reached in two to three years and a particular female may produce a litter only once every second or third year (Leopold, 1959). Mountain lions typically hunt at night.

Mountain lions are known to occur throughout the project region (Grinnell, 1937). Recent sightings are known from Gaviota State Park and Las Varas Ranch (Aspen Environmental Group, 1993), Tajiguas Canyon and Gato Creek (Hunt, pers. obs.). This species is expected to occur in the project area, especially the back canyon portions of the site.

The proposed expansion could potentially affect this species through loss of foraging and denning habitat and increased human presence that could disrupt dispersal and foraging movements.

**Ringtail (*Bassariscus astutus*)**  
**Status:** California Fish and Game fully-protected fur-bearing species

Ringtails have an extensive geographic distribution across North America, inhabiting a range of scrub and open woodland habitats from near sea level to montane regions. Loss or alteration of scrub and riparian woodland habitats and associated aquatic habitats may be important factors contributing to regional population declines in this species.

The natural history of ringtails in southern California is poorly understood. They are crepuscular or nocturnal, but apparently have very well-defined nighttime activity periods, which may coincide with the activity of their primary prey, rodents (Hunt, pers. obs.). They retreat to den sites in caves, rock crevices, or hollow trees during the day. They are normally solitary, except during the breeding season when stable pairs are apparently formed and the male may assist the female in raising the young (Leopold, 1959). Young are born in late spring and early summer in Arizona (Richardson, 1942). Ringtails are primarily carnivorous, although they also consume a variety of plant foods (Grinnell, 1937; Hunt, pers. obs.).
Ringtails probably occur in most of the drainages along the south coast of Santa Barbara. They have been observed in or near Eagle Canyon west of Goleta (Aspen Environmental Group, 1993), and near Painted Cave (Collins, 1998). Tracks of this species have been found in mud and sand substrates adjacent to Gato Creek and Tajiguas Creek (Hunt, 1995), as well as in Canada de la Pila during field surveys for this report.

The proposed expansion could potentially affect this species through loss of foraging and denning habitat and increased human presence.

5.5 Locally Sensitive Species

This section contains species that are regionally rare or declining, or are species at or near their distributional limits. These taxa are not currently recognized by state or federal agencies, but may be protected by one or more County statutes (County of Santa Barbara, 1992, 1995). The Santa Barbara Botanic Garden has identified a number of plant species that are regarded as locally sensitive (SBBG, 1988a,b) from Smith (1976) and other sources (Wiskowski, 1988).

**Nuttall’s snapdragon (Antirrhinum nuttallianum)**

This small annual snapdragon is rarely noted on the mainland, although it is relatively common on the northern Channel Islands, where it is found beneath shrubs in scrub habitats, along creeks, on rock outcrops and in disturbed places. Smith (1976) contains only one mainland record, from Carpinteria, Santa Barbara County, and approximately 35 air miles east of the project area.

Because this species is an annual, it may be widely spread in the chaparral seed bank and appear only occasionally, particularly following fires. It was not found during the field surveys for this project or earlier (McClelland Engineers, Inc., 1988) surveys however, this portion of the Santa Ynez Mountains has not burned for decades. If it occurs on-site, it would be affected by the front and back canyon configurations.

**Triple-awned grass (Aristida adscensionis)**

A fairly widespread species, triple-awned grass is rarely recorded from the mainland in the Santa Barbara area. Smith (1976) theorizes that it may often be overlooked, and may be more common than collection data would indicate. This species has been found in coastal sage scrub in Alegria Canyon, about six air miles west of the project site (Wiskowski, 1988). It is unlikely to persist in the disturbed grassland and ruderal habitats that would be affected by the front canyon configuration. However, if this species is found in the project area, it would occur in openings in scrub, chaparral, and woodland habitats that would be impacted by the proposed expansion.

**Cooper's lip fern (Cheilanthes cooperae)**

Cooper's lip fern is a local endemic that grows on calcareous substrates in the Santa Ynez Mountains, northward into the San Rafael Mountains. The type locality is in Tajiguas Canyon, approximately four air miles east of the project area, where it grows on Vaqueros Sandstone (Smith, 1976). It potentially occurs on the west side of the canyon slopes in the area that could be affected for the sideways expansion of the existing landfill. It is very likely to occur in areas that would be affected by expansion into the back canyon.

This species was not found during field surveys for this report or during earlier proposed expansion projects (McClelland Engineers, Inc., 1988). However, a focused survey to locate and salvage this unusual fern should be undertaken for either the front or back canyon configurations.
Creek dogwood (*Cornus sericea* ssp. *occidentalis*)

Creek dogwood is a wide-ranging shrub that occurs along coastal Santa Barbara County in many canyons, along creeks, and freshwater seeps. It has been found in Gato Canyon and Las Flores Canyon, west of Goleta (Hunt, pers. obs., and Dames & Moore 1993, respectively). Other occurrences include Buell and Cojo Canyons on Hollister Ranch, west of the project area, and northward to San Antonio Creek and Miguelito Creek, as well as some inland localities, such as Los Alamos and Zaca Lake (Smith, 1976).

This species was not found in the project area during the field surveys but may occur farther northward in the Canada de la Pila drainage and around seeps on the east-facing slopes, in the back canyon. The front canyon configuration is not expected to impact this species. The proposed expansion may impact this species, especially along Canada de la Pila and mesic portions of the east-facing slopes of the back canyon.

**Santa Barbara honeysuckle (*Lonicera subspicata* ssp. *subspicata*)**

Santa Barbara honeysuckle is endemic to the project region, ranging northward from the Casitas Pass area north of Carpinteria, westward to the foothills and mountains immediately west of Goleta (Smith, 1976). The westernmost known occurrence is in Las Flores Canyon (Dames & Moore, 1993), approximately seven air miles east of the project site. This species was found in open scrub/oak woodland on south-facing slopes above the northeastern corner of the back canyon in May, 2000 (see description in Appendix 2). The proposed expansion would eliminate this species within the footprint of the expanded landfill.

**Cliff-aster (*Malacothrix saxatilis* var. *saxatilis*)**

This subspecies of cliff-aster is endemic to the immediate south coastal region of Santa Barbara County, from near the Santa Barbara/Ventura County line westward to the Point Conception area (Smith, 1976). Because its habitat is being lost to coastal development, it and hybrids to it, are regarded as locally sensitive. The common subspecies, *M. s. var. tenuifolia* is fairly common in Canada de la Pila, where it frequently colonizes road cuts. The sensitive variety of cliff-aster was not found in the canyon, although it probably grows on adjacent coastal bluffs.

**Lompoc monkeyflower (*Mimulus aurantiacus* (= *Diplacus lompocense*) var. *lompocense*)**

Lompoc monkeyflower is most common in the diatomaceous and Pleistocene dune soils of northern Santa Barbara County, but it ranges southward as far as Gaviota Pass, approximately three air miles west of the project area (Smith, 1976). Lompoc monkeyflower was synonymized into *Mimulus aurantiacus* in the recent treatment of the genus in Hickman (1993). However, many botanists disagree with this arrangement.

Lompoc monkeyflower, or hybrids of this taxon with aurantiacus, have been found near Gaviota (Rindlaub, pers. obs.). Characteristics of Lompoc monkeyflower may be found in monkeyflowers as far east as Canada de la Pila. A follow-up survey to check fruit characters of bush monkeyflower in the canyon would assist in determining the affinities of the plants in the project area.

**Pink-flowering currant (*Ribes sanguineum* var. *glutinosum*)**

Smith (1976) lists this locally sensitive shrub from Las Flores Canyon, approximately seven air miles east of the project area, which is evidently the southernmost location for this species. It has a patchy distribution in the Santa Ynez Mountains west of this location is discontinuous, and it occurs north of Point Conception along coastal western Santa Barbara County where it is found along creeks in cool, canyons, northward to coastal dune swales on Nipomo Mesa. Its occurrence in the back canyon area of Canada de la Pila is unlikely, but possible, especially near seeps or in deeply shaded spots northward along this drainage.
Hoffmann's nightshade (*Solanum xanti* var. *hoffmannii*)

This hairy variety of chaparral nightshade is found from the Canada del Refugio area, about six air miles east of the project area, westward across Hollister and Bixby Ranches to Point Conception, and northward to Santa Rosa Road and Miguelito Canyon, south of Lompoc. It has been found at Nojoqui Falls on the north side of the Santa Ynez Mountains (Smith, 1976). Its range encompasses the project area. However, Hoffmann's nightshade is no longer regarded as a valid taxon in Hickman (1993). Even if regarded as a 'form' rather than a variety, this local endemic is treated as a locally sensitive species under County policies (Wiskowski, 1988). Hoffmann's nightshade is relatively common in the oak woodland and chaparral in the project area.

This species would not be affected by the front canyon configuration because of lack of suitable habitat in the proposed expansion areas however, it would be affected by the back canyon expansion configuration. It was found in the back canyon during field surveys in May, 2000 (see description in Appendix 2).

Camas lily (*Zygadenus fremontii* var. *inezianus*)

This bulbiferous perennial is endemic to the Santa Ynez Mountains, and the Purisima Hills near Lompoc in the North County. It typically follows fire (Smith, 1976). This plant was not seen in the mature chaparral in Canada de la Pila, which has not burned since the Refugio fire in the 1950's.

Presumably, this species occurs in the project area where it would be affected by the proposed expansion.

Warbling vireo (*Vireo gilvus*)

**Status: Species of Local Concern**

Warbling vireos occur in open deciduous woodlands throughout the United States as a summer resident (National Geographic Society, 1983). In California they frequent riparian and oak-riparian woodlands and have experienced significant regional and local declines because of habitat alteration of riparian woodlands and brood parasitism from the brown-headed cowbird.

They are an uncommon to locally fairly common summer resident along the south coast of Santa Barbara County where they were formerly common. They are relatively common along the north coast (Lehman, 1994). Warbling vireos are local breeders in the riparian corridors of coastal streams, but as the coastal plain segment of most of the streams between Goleta and Gaviota has been more or less degraded by human activities, most breeding takes place along the foothill and mountain reaches of these watercourse (e.g., foothill segments of Atascadero and Cieneguitas Creeks (Hunt, pers. obs.) and San Jose and Maria Ygnacio Creek (Lehman, 1994).

This species is expected to occur along the back canyon portion of the Canada de la Pila riparian corridor. The front canyon configuration is not expected to affect this species. The back canyon configuration would remove habitat for this species and increase human presence and noise levels that would likely result in abandonment of potential breeding habitat.

Grasshopper sparrow (*Ammodramus savannarum*)

**Status: Species of Local Concern**

Grasshopper sparrows are discontinuously distributed throughout the United States as a winter (southern U.S.) or summer (northern U.S.) resident. They are an uncommon and local summer resident in California, including the south coast of Santa Barbara County (National Geographic Society, 1983; Lehman, 1994).
Regional densities of grasshopper sparrows in southern California have declined as grassland and open coastal sage scrub habitats have been converted to agricultural and urban uses.

Grasshopper sparrows frequent extensive grassland areas, with widely scattered shrubs or taller vegetation, or rock outcrops, which are typically used as perch sites (Lehman, 1994; Hunt, pers. obs.). Breeding records for the south coast between Goleta and Gaviota include: Refugio Canyon, Las Flores Canyon, Gato Canyon, Las Varas Canyon, and western Goleta (Lehman, 1994). Each of these localities are in the foothill portions of these canyons. Records for More Mesa and Ellwood Mesa (Goleta) are the only recent summer records well out on the coastal plain along the south coast of Santa Barbara County. It was apparently formerly more common as a breeder in these coastal localities (Lehman, 1994).

Both the front and back canyon expansion configurations may potentially affect this species through loss of grassland/ruderal and adjacent open scrub habitats that may be used for foraging and breeding.

5.6 Summary of Biological Resource Sensitivities

Resource sensitivities were considered at both the habitat and individual species level. In general terms, sensitive habitats are those that support unique or rare plant or animals species, are especially valuable to wildlife, or are prime examples of a particular biotic community. Such habitats are afforded species protections by the County Comprehensive Plan Conservation Element (County of Santa Barbara, 1979). Development within certain habitats, such as riparian woodland or streambeds, is also regulated by the California Department of Fish and Game and the U.S. Army Corps of Engineers. Federal- and State-listed species, as well as Federal candidate species and former candidate species (now called Federal Species of Concern), are regulated by the U.S. Fish and Wildlife Service. Species of Special Concern in California are regulated by the California Department of Fish and Game.

A total of 83 sensitive species were considered for this report (38 plant species and 45 animal species). Table 4 summarizes the known or potential occurrence of sensitive plant and animal species in the various regulatory categories.

<table>
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<th>Regulatory Status</th>
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<th>Potential Plant Species(b)</th>
<th>Known Wildlife Species</th>
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<td>34</td>
<td>7</td>
<td>38</td>
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</tbody>
</table>

(a) Includes plant species regarded by the California Native Plant Society as sensitive.
(b) Includes species known from region but considered unlikely to occur in project area.

Sensitive habitats. Nine vegetation types and six distinct wildlife habitats are found in the project area. Three vegetation types are considered sensitive habitats: Southern coast live oak riparian woodland, Southern willow scrub, and Central Coast cottonwood-sycamore riparian forest.
**Sensitive Plants.** No federal- or state-listed plant species are known from the project area (Table 4). Four species on California Native Plant Society (CNPS) lists and/or local (County) lists, were found in the project area during surveys for this report or have previously been collected in Canada de la Pila: Plummer’s baccharis, Cooper’s lip fern (historic locality), Santa Barbara honeysuckle, and Hoffmann’s nightshade. Three state-listed plants have a low probability of occurring in the project area: Gaviota tarplant, Lompoc yerba santa, and Santa Ynez false-lupine. Thirty-one plants on CNPS lists or of Local Concern potentially occur in the project area (Table 4).

**Sensitive Wildlife.** The California red-legged frog and brown pelican, both federally-listed species, were found in the project area during field surveys for this report. Five other sensitive wildlife species, all State Species of Special Concern or otherwise CDFG-protected, were found in the project area during surveys for this report: Cooper’s hawk, white-tailed kite, California horned lark, San Diego desert woodrat, and ringtail. Five federal- and/or state-listed species and one federal candidate for listing potentially occur in the project area because of the presence of suitable habitat and because these species are known from other localities in the vicinity of the project area: tidewater goby, southern steelhead, American peregrine falcon, Swainson’s hawk, bank swallow, and southwestern pond turtle. Thirty Federal and/or State Species of Concern and two species of local (County) concern potentially occur in the project area (Table 4).

**6.0 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

**6.1 Definition and Use of Significance Criteria**

For biological resources, an impact that results in a long-term loss or degradation of a sensitive habitat, or that adversely affects the population of a sensitive species, will generally be considered significant. Operationally, "sensitive" habitats or species are those that are demonstrably rare, threatened, or endangered; are protected by statute or regulation; or have recognized commercial, recreational, or scientific importance.

- The significance criteria of potential impacts to biological resources was based on the County of Santa Barbara Environmental Thresholds and Guidance Manual (County of Santa Barbara, 1992). This manual primarily uses Appendix G of the State CEQA Guidelines for its criteria. An impact is considered significant if it results in any of the following:

  - Conflict with local, State, or Federal plans and policies protecting sensitive species and habitat resources;
  - Adverse effects on a rare or endangered species of animal, plant, or the habitat of the species;
  - Reduction or elimination of species diversity or abundance;
  - Reduction or elimination of quantity or quality of nesting areas;
  - Limitation of reproductive capacity through loss of individuals or habitat;
  - Creation of a barrier that prevents the migration of any resident or migratory fish or wildlife species;
  - Limitation or fragmentation of the geographic distribution of any animal species;
  - Interference with natural processes, such as fire or flooding, upon which habitat depends;
  - Loss of valuable habitat for fish, wildlife, or plants for more than five years.

In connection with the above, the following impact classification system is applied:
Class I: Significant impacts that cannot be feasibly mitigated to less than significant levels;
Class II: Significant impacts that can be feasibly mitigated to less than significant levels;
Class III: Adverse impacts that are less than significant, and;
Class IV: Beneficial impacts.

6.2 Project-related Impacts and Proposed Mitigation Measures

Although the disturbance area would be the same under either the Front or Back Canyon Configuration, this section discusses anticipated effects of the front and back canyon expansion configurations that apply generally to the assessment of impacts on listed, proposed, or candidate species. Impacts to biological resources can be direct or indirect. Direct impacts are those which occur at the same time and in the same place as the proposed development activity. Indirect impacts are those that occur at a later time, and often away from the site of the proposed activity.

6.2.1 Front Canyon Expansion Configuration

Class I Impacts: Adverse, Significant Impacts that Cannot be Mitigated to Insignificant Levels

Botanical Resources:

Impact BFC (Botanical Front Canyon)-1: The expansion will result in loss of an estimated 33 acres of native and ruderal habitat, including coast live oak woodland, coastal sage scrub, and approximately 38 acres of chaparral.

Mitigation BFC-1: Despite the implementation of habitat restoration plans, it is unlikely that this vegetation will ever approach pre-project conditions. Consequently, there will be significant residual impacts remaining after implementation of mitigation measures.

Impact BFC-2: Excavation in the western borrow area in the front canyon could potentially impact sensitive plant species on the west side of the canyon on Vaqueros Sandstone. Disturbance of at least five acres on the Baron Ranch property adjacent to the eastern border of the existing landfill may impact sensitive bunch grass grassland. Continued use of the back canyon for landfill operations could result in loss of sensitive plant species associated with the oak woodland and coast live oak woodland riparian forest.

Mitigation Measure BFC-2: A focused survey by a qualified botanist should be conducted to locate sensitive species, particularly regionally rare ferns, grasses, and shrubs that may grow in these areas, including the affected portions of Baron Ranch. If these species are found, the plants should be salvaged and/or propagules should be transplanted to a suitable location on County-owned land that is protected by a conservation easement (e.g., the Baron Ranch), or to land owned by a land trust or other comparable organization. Prospective transplanting sites should be inspected and approved by a qualified botanist prior to removal of vegetation for the project. Transplants should be maintained for a minimum of five years, or until a qualified botanist determines that the transplants have successfully established.

Impact BFC-3: Lateral expansion of the landfill potentially could result in the loss of coast live oak trees. Continued use of the back canyon for landfill operations could also result in loss of sensitive plant species associated with the oak woodland and coast live oak woodland riparian forest.
Mitigation Measure BFC-3: Avoid all coast live oaks in the canyon. Live oaks along the access roads in the back canyon shall be protected from further damage by landfill operations by pulling dirt, currently placed against the trunks, out from beneath the tree canopies. The east side of the oak woodland riparian corridor along the back canyon work area should be fenced with triple strand non-barbed wire fencing to prevent future intrusion into the tree root zones with spoil and heavy equipment. In the event that an oak is severely damaged by heavy equipment, the tree shall be pruned under the direction of a licensed arborist.

In the event that any oak is lost due to project activities, it shall be replaced by planting 1-gallon seedlings at a ratio of 10:1 on County owned land that is protected with a conservation easement, or on land with similar protection managed by a land trust. Replacement trees shall be grown from acorns collected along the Gaviota coast between San Onofre and Las Flores canyons. Plantings shall be protected from herbivores, staked, and maintained for a minimum of three years. Oaks shall be considered mitigated when at least three of the ten replacement saplings have reached ten (10) feet in height, are in good health as determined by a licensed arborist, and have been independent of supplemental water for a minimum of two years.

Impact BFC-4: Continued soil disturbance around the landfill could spread undesirable, invasive plant species.

Mitigation Measure BFC-4: Continue application of an approved erosion control hydroseed mix on all exposed slopes just prior to the onset of the winter rainy season (between October 15 and November 1) as recommended in Appendix D of McClelland Engineers, Inc. (1988). A habitat restoration/revegetation plan with a significant non-native vegetation control program, should be developed for the entire landfill site by a qualified biologist. This plan should be implemented twice each year (late spring and late fall), and should focus on chemical and manual methods to control the growth and dispersal of established colonies and individual plants of invasive, non-native species such as giant reed (Arundo donax), tree tobacco (Nicotiana glauca), Harding grass (Phalaris aquatica), veldt grass (Ehrharta calycina), pampas grass (Cortaderia sp.), sweet fennel (Foeniculum vulgare), and other species.

Wildlife Resources:

Impact WFC (Wildlife Front Canyon)-1: Existing landfill operations, including draining and sediment removal from both in-channel basins, constitutes a significant, unmitigable impact to California red-legged frogs, which utilize these water sources as foraging and breeding habitat.

Mitigation Measure WFC-1: An interim red-legged frog management plan (Appendix 5), involving reduced water removal from the southern pond is currently being implemented; however, this plan does not reduce significant impacts associated with current landfill operations and maintenance practices to insignificant levels.

An out-of-channel sedimentation basin was constructed in 1999 in the back canyon portion of the landfill. The purpose of this basin is to intercept sediment-laden water draining the northern portions of the landfill and other disturbed areas of the back canyon before it reaches Canada de la Pila. This basin will control a major source of sediment input to the channel that previously went into the in-channel sedimentation basins that are inhabited by red-legged frogs. However, periodic sediment removal from the in-channel basins may still be necessary, and this action, along with seasonal water withdrawals for landfill use, constitutes a significant impact to red-legged frogs in this basin. A long-term red-legged frog management plan currently being prepared will address these issues and will focus on reducing these impacts to less than significant levels.
**Impact WFC-2:** The expansion configuration will result in loss of an estimated 33 acres of native and ruderal habitat, including coast live oak woodland, coastal sage scrub, and approximately 38 acres of chaparral.

**Mitigation Measure WFC-2:** This loss will likely be permanent, as mitigation measures will not restore pre-project wildlife habitat values to the affected areas. Consequently, there will be significant residual impacts remaining after implementation of mitigation measures.

**Impact WFC-3:** Excavation in the eastern and western borrow areas will remove significant amounts of annual grassland and open scrub habitat that provides foraging and breeding habitat for wildlife, including sensitive species such as loggerhead shrikes and white-tailed kites, which were observed in this habitat during the field surveys for this report. Replacement of this vegetation through implementation of a habitat restoration and revegetation plan may not fully mitigate expansion-related impacts.

**Mitigation Measure WFC-3:** All disturbed slopes that were naturally vegetated with annual grassland should be revegetated with a grassland/coastal sage scrub seed mix, depending on slope and aspect. The final revegetation area should approximately equal the area disturbed by landfill expansion (1:1 replacement ratio). The mix should be collected and prepared by a qualified seed company that specializes in the collection of native seed (e.g., S & S Seeds, Carpinteria, CA). Seed sources should include County property around the landfill, including Baron Ranch, and should contain only native species. The final restoration and revegetation plan should be prepared by a qualified restoration biologist.

**Impact WFC-4:** Excavation and construction activities disturb soils, creating suitable conditions for the establishment of invasive, non-native vegetation. Typically these species have low wildlife value and degrade native habitats in which they occur.

**Mitigation Measure WFC-4:** See Mitigation Measure BFC-3.

**Class II Impacts: Significant Impacts that can be Mitigated to Less than Significant Levels**

**Wildlife Resources:**

**Impact WFC-5:** The landfill functions as an attractive nuisance insofar as large numbers of American crows (*Corvus brachyrhynchos*) and seagulls (*Larus* spp.) forage on the working face of the landfill and roost along the adjacent beaches and nearshore waters, as well as the in-channel sedimentation basins. The latter are inhabited by California red-legged frogs, a listed species, which may suffer direct mortality from predation and decreased water quality.

The attractiveness of the landfill to seagulls and American crows poses a significant problem for listed species, such as tidewater gobies in terminal lagoons in adjacent drainages, red-legged frogs in the Canada de la Pila in-channel sedimentation basins, brown pelicans foraging in nearshore waters adjacent to the landfill, and raptors and other bird species nesting or foraging around the landfill. The unnaturally high concentration of gulls around the landfill may be a significant source of predation on frogs and gobies, degrades water quality in the in-channel sedimentation basins in Canada de la Pila, and harasses pelicans foraging in nearshore waters around the landfill. Crows are known egg and nestling predators on songbirds and harass nesting, roosting, and foraging raptors (Dames & Moore, 1995, 1996). Current procedures to control gulls at the landfill, which involve noise-making devices and active working of only small portions of the landfill at a time, have been ineffective at controlling the gull population at the landfill. Symptomatic
solutions, such as suspending wires across the sedimentation basins to prevent gulls from using these water sources, could result in mortality of non-target species, including raptors.

**Mitigation Measure WFC-5:** The attractiveness of the landfill to gulls and crows should be reduced by: (a) covering potential gull food sources, i.e., garbage; (b) reducing the attractiveness of the in-channel sedimentation basins as roosting sites by gulls, and (c) implementation of a more aggressive gull control program. See Mitigation Measure WBC-4 for the Back Canyon Expansion Alternative (next section) for additional mitigation measures that can be used to reduce the control gulls and crows at the landfill. Habitat restoration of the southern in-channel basin should focus on creating a dense growth of riparian trees, shrubs, and aquatic emergent vegetation around the margin and nearshore waters of the southern basin. However, this restoration effort will be compromised by artificial water withdrawals from this basin for landfill use, as well as periodic sediment removal activities. These conflicting issues will be addressed and resolved in the long-term red-legged frog management plan currently being prepared.

**Impact WFC-6:** Northern expansion of the landfill under the front canyon configuration would remove significant amounts of mature chaparral vegetation that contains nesting and foraging habitat for the San Diego desert woodrat, a Federal and State Species of Special Concern.

**Mitigation Measure WFC-6:** This impact can be mitigated to less than significant levels by:

(a) conducting a complete survey of all suitable desert woodrat habitat impacted by landfill expansion prior to vegetation removal. Following this, a capture and relocation effort can be conducted to move woodrats and their nests to suitable adjacent habitat. This action should be timed to occur immediately prior to removal of vegetation in order to reduce the likelihood of woodrats returning to formerly occupied habitat.

(b) All disturbed slopes on Vaqueros Sandstone should be revegetated with a chaparral seed mix composed of seed collected from similar habitats between Gaviota and Goleta. Revegetation should achieve a 1:1 replacement ratio of this habitat. The final restoration/revegetation plan should be developed by a qualified biologist. Additionally, there are opportunities to improve and expand chaparral and coastal sage scrub vegetation on the Baron Ranch that have been disturbed by decades of agricultural, specifically orchard, activities.

**Impact WFC-7:** The back canyon portion of the landfill is currently used for separating and processing green waste, operations that would increase when the landfill is expanded. Increased human presence and associated noise may affect wildlife resources, including sensitive bird species, that may use the Canada de la Pila riparian corridor and adjacent oak woodland as foraging and/or breeding habitat.

**Mitigation Measure WFC-7:** All mechanized equipment should be equipped with approved mufflers. All construction, earth-moving, or material processing activities should be restricted to existing working hours (7 am to 4 pm, six days a week).

**Impact WFC-8:** Displacement and/or disturbance to common wildlife species as a result of expansion of the existing landfill is considered an adverse impact. Less mobile wildlife occupying the construction footprint might not survive construction activities, while more mobile species would be displaced into adjacent habitat. Displacement of wildlife, such as small mammals, into adjacent occupied habitat often disrupts established home range patterns, and often results in mortality of the displaced individuals due to increased exposure to predators, starvation, desiccation, or other factors. Indirect impacts to wildlife species include disruption of seasonal/daily activity patterns from increased noise, night-time lighting of the facility, and
wildlife mortality along the access road. The loss of occupied habitat and displacement/disturbance of common wildlife species is not expected to result in substantial disturbance to the wildlife community structure of the project area or region. Some of these impacts would be relatively temporary, as certain wildlife species re-invade abandoned portions of the landfill.

Animals most affected by noise are those which rely on auditory signals to find mates, set up and defend territories, recognize young, and detect and locate prey. These functions could be critically affected by noise. Even animals which do not rely on sound signals for such critical function could be indirectly affected by noise, if forced by it to seek out quieter environments. Ultimately, a reduction in land area available for occupation by these animals could increase competition for food and space, causing a general degradation of the environment and a reduction in population density of affected wildlife species for some distance around the landfill.

Mitigation Measure WFC-8: In the project area, most noise-related impacts to wildlife will occur at project construction sites, along access roads, and in actively-worked landfill areas. Wildlife could experience some stress from this level of noise, but will probably avoid habitats adjacent to construction zones and heavily traveled roads. Impacts to wildlife from these sources from the front canyon landfill expansion configuration are expected to be limited to daylight hours and to exist only for the duration of landfill occupancy.

Class III Impacts: Adverse, but Insignificant

There are no Class III impacts to biological resources resulting from implementation of the front canyon expansion configuration.

Class IV Impacts: Beneficial Impacts

There are no Class IV impacts to biological resources resulting from implementation of the front canyon expansion configuration.

6.2.2 Back Canyon Expansion Configuration

The impacts to botanical and wildlife resources resulting from expansion into the back canyon are similar to those experienced under the front canyon configuration.

Class I Impacts: Significant Impacts that Cannot be Mitigated to Insignificant Levels

Botanical Resources:

Impact BBC-1: The back canyon expansion configuration would eliminate or degrade significant amounts of grassland and chaparral vegetation that cannot be recreated with on- or off-site restoration for many years, if at all.

Mitigation Measure BBC-1: To compensate for native habitats disturbed or removed by the landfill expansion, a County-approved biologist shall prepare and implement a revegetation plan for each habitat type disturbed (e.g., a replacement ratio of not less than 1:1 for each disturbed acre). The plan shall utilize native plants and seed stock from locally-obtained sources to the maximum extent feasible and also take into account requirements for maintaining the integrity of the landfill cover system. Species selection shall be dependent upon the nature of the habitat.
Plan Requirements and Timing: A revegetation or restoration plan for the landfill shall be submitted to and approved by the LEA with concurrence from the CIWMB and RWQCB as part of the Landfill Closure Plan. Monitoring: SWUD shall ensure compliance with the plan. Residual Impacts: The proposed mitigation is expected to eventually reduce these impacts, but residual impacts will still be considered significant because of the length of time and uncertainty inherent in habitat restoration. The effectiveness of habitat restoration will depend on careful implementation of an effective restoration plan and continued management of the monitoring effort.

Impact BBC-2: Expansion into the back canyon would result in the loss of approximately 100 mature coast live oak trees and oak woodland habitat.

Mitigation Measure BBC-2(a): An oak tree replacement plan shall be prepared to replace oak trees identified for removal. Any oak trees, which are removed and/or damaged (more than 25% of root zone disturbed) shall be replaced on a 10:1 basis with one-gallon size saplings grown from locally obtained seed (i.e., acorns collected along the Gaviota coast between Las Flores and San Onofre canyons. Trees shall be planted prior to the winter rains, irrigated, and maintained until established (five years). The plantings shall be protected from predation by wild and domestic animals, and from human interference by the use of staked, chain link fencing and gopher fencing during the maintenance period.

Oaks shall be considered mitigated when at least three of the ten replacement saplings have reached ten (10) feet in height, are in good health as determined by a licensed arborist, and have been independent of supplemental water for a minimum of two years.

Plan Requirements and Timing: An oak-planting plan shall be prepared prior to initiation of landfill expansion activities. The plan shall identify a planting area, outlines propagation procedures, and identifies maintenance and monitoring requirements, including contingency measures. Monitoring: SWUD shall conduct site inspections throughout all phases of landfill development to ensure compliance with the plan and evaluate all tree protection and replacement measures.

Mitigation Measure BBC-2(b): An oak tree protection program, prepared by a County-approved biologist, shall be implemented. The program shall include but not be limited to the following components:

a. No grading or development shall occur within the driplines of oak trees, other than those identified for removal.

b. All oak trees that are identified to remain on-site and are within 25 feet of proposed ground disturbances shall be temporarily fenced with chain-link or other satisfactory material throughout all grading and construction activities. The fencing shall be installed six feet outside the dripline of each oak tree, and shall be staked every six feet.

c. Within six feet of any oak tree dripline the following shall be prohibited:
   1. Construction equipment parking, storage or operation;
   2. Stockpiling of fill soil, rocks, or construction materials;
   3. Placement of artificial surface, pervious or impervious;

d. If any roots encountered are one inch in diameter or greater, they shall be cleanly cut under the direction of a County-approved arborist/biologist.

Plan Requirements and Timing: The plan shall be prepared prior to initiation of landfill expansion
activities. Prior to grading activity within 25 feet of any oak tree, protective fencing shall be installed and maintained throughout project implementation within 25 feet of the area. All other requirements shall be implemented as appropriate.

**Monitoring:** SWUD shall conduct site inspections throughout all phases of landfill development to ensure compliance with the plan and evaluate all tree protection and replacement. Removal of coast live oaks shall be monitored by a County-approved biologist to verify the total number of trees removed. Oaks shall be considered fully mitigated when at least three of the ten replacement saplings have reached ten feet in height, are in good health as determined by a licensed arborist, and have been independent of supplemental water for a minimum of two years.

**Residual Impacts:** The mitigation measures listed above are expected to eventually reduce impacts to oak woodlands, but residual impacts still would be considered significant because of the length of time and uncertainty inherent in habitat restoration. The effectiveness of habitat restoration will depend on careful implementation of an effective restoration plan and continued management of the maintenance and monitoring effort.

**Wildlife Resources:**

**Impact WBC-1:** Operation of the landfill includes use of the two sedimentation basins in the channel of Canada de la Pila. The basins serve to trap sediment coming off the landfill and the water collected is used for dust control. Sediment must be removed from the basins periodically to maintain the basin's capacity to collect sediment and water. Continued operation of the basins could have a potentially significant impact on the California red-legged frogs and the their habitat within the basins.

**Mitigation Measure WBC-1:** To reduce impacts to California red-legged frogs that reside in the in channel sediment basins, a long-term California red-legged frog Management Plan shall be developed. At a minimum, the following actions shall be implemented as indicated prior to draining of the pond for water to be used as landfill dust control and prior to maintenance activities (e.g. sediment removal):

a) The basin(s) shall be drained between mid-July and November for water used as landfill dust control. Maintenance activities in both basins will occur no later than 15 November following draining of the basin(s). Should SWUD demonstrate a need to conduct activities outside this period, the activities shall be subject to review and approval by the USFWS.

b) At least 15 days prior to the onset of sediment basin draining or maintenance activities, the SWUD shall submit the name(s) and credentials of biologists who conduct activities specified in the following measures to the U.S. Fish and Wildlife Service (USFWS). No project activities shall begin until SWUD receives verbal/written approval from the USFWS that the biologist(s) is qualified to conduct the work.

c) Before any draining or maintenance activities begin on the sediment basin, a USFWS-approved biologist shall conduct a training session for all landfill personnel involved with these activities. At a minimum the training shall include a description of the California red-legged frog and its habitat, and the general measures that are being implemented to conserve the California red-legged frog as they relate to the project. Brochures, books, and briefings may be used in the training session, provided that a qualified person is on hand to answer any questions.

d) A USFWS-approved biologist shall survey the sediment basin at least two weeks before draining the basin. If California red-legged frog tadpoles or eggs are found the approved biologist shall contact the USFWS to determine the appropriate level of consultation.

e) Maintenance activities (sediment removal) in the basins shall be conducted when the basins are as dry as possible. A qualified biologist, approved by USFWS, shall perform a survey of soil cracks
immediately prior to initiation of sediment removal. Any California Red-legged Frogs found should be captured and relocated out of harm's way in suitable refugia upstream of the sediment basins in the Pila Creek watershed. Each night following sediment removal, the remaining soil cracks should be searched in preparation for the next day’s work. Sediment removal, once initiated, should proceed as quickly as possible.

f) A USFWS-approved biologist shall be present prior to and during draining and maintenance until such a time all California red-legged frogs are removed, workers are instructed, and sediment removal has been completed. After this time, the SWUD shall designate a person to monitor on-site compliance with all impact minimization measures. The USFWS-approved biologist shall ensure that this individual receives training outlined above in measure (e) and is trained in the identification of California red-legged frogs. The monitor and the USFWS-approved biologist shall have the authority to halt any action that might result in impacts that exceed the levels anticipated by the USFWS during review of the proposed action. If work is stopped, the USFWS shall be notified immediately by the USFWS-approved biologist or on-site biological monitor.

g) All fueling and maintenance of vehicles and other equipment shall occur at least 100 feet from any riparian habitat or water body. SWUD shall ensure contamination of habitat does not occur during such operations. Prior to the onset of work, the USFWS shall ensure that SWUD has prepared a plan to allow a prompt and effective response to any accidental spills. All workers shall be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur.

h) Native riparian and upland vegetation on the upper banks of the basins shall remain in place to provide cover for Red-legged Frogs except where the equipment will access the basins during sediment removal. Sediment removal shall occur in the bottom of the basins, below the high water mark, and in the historic limits of sediment deposition in the basin. A revegetation and/or enhancement plan to enhance riparian wetland and upland vegetation surrounding the basins shall be prepared. Such a plan must include, but not be limited to, location of the restoration/enhancement, species to be used, restoration/enhancement techniques, time of year the work will be done, identifiable success criteria for completion, and remedial actions if the success criteria are not achieved.

i) Stream contours shall be returned to their original condition at landfill closure, unless consultation with the USFWS has determined that it is not beneficial to the species or feasible.

j) Access to the sediment basins shall be via existing access routes. The size of staging areas, and the total area of the activity shall be limited to the minimum necessary to achieve the project goal. Routes and boundaries shall be clearly demarcated. Where impacts occur in these staging areas and access routes, restoration shall occur as identified in measures h) and i).

k) To control erosion during and after project implementation, the applicant shall implement best management practices (BMPs) as identified by the California Regional Water Quality Control Board (RWQCB).

l) During pumping of water from the in-channel sediment basins, intakes shall be completely screened with wire mesh not larger than 1/4 inch to prevent California red-legged frogs from entering the pump system. Upon completion of pumping activities, any barriers to flow shall be removed in a manner that would allow flow to resume with the least disturbance to the substrate.

m) A USFWS-approved biologist shall permanently remove, from within the project area, any individuals of exotic species, such as bullfrogs, crayfish, and centrarchid fishes, to the maximum extent possible. SWUD shall have the responsibility to ensure that their activities are in compliance with the
California Fish and Game code.

**Plan Requirements and Timing:** A California Red-Legged Frog Management Plan that incorporates the above measures shall be developed and submitted to the U.S. Army Corps of Engineers (ACOE), who will initiate consultation with the USFWS, and California Department of Fish and Game (CDFG) for review and approval prior to landfill expansion. An interim California Red-Legged Frog Management Plan is included in Appendix 5.

**Monitoring:** SWUD shall coordinate with USFWS and ensure compliance with the plan. A qualified biologist shall monitor red-legged frog presence in the sediment basins quarterly (January, April, July, and October) for at least five years. The results of these surveys with an evaluation of the effectiveness of plan requirements, shall be reported annually to the SWUD for submittal to the ACOE, USFWS, and CDFG for review and comment.

**Residual Impacts:** Even with implementation of these mitigation measures, impacts from landfill operations on California red-legged frogs would still be significant. Artifiically fluctuating water levels in the in-channel basin will not allow shoreline and nearshore vegetation to develop (which is a habitat requirement for red-legged frogs), gulls and crows (potential predators on larval and juvenile frogs) will be attracted to the bare shoreline created by fluctuating water levels, and mortality of juveniles and adults due to exposure may occur with contraction of water levels.

**Impact WBC-2:** Loss or degradation of significant amounts of oak woodland, grassland, and chaparral vegetation would significantly depress wildlife values in the back canyon portion of the landfill, and could possibly affect a number of sensitive species that are known to or potentially use these habitats for foraging and/or breeding, including the California red-legged frog, Cooper's hawk, and loggerhead shrike, all of which have been observed in the back canyon portion of the landfill property during field surveys for this report. On- and off-site restoration of this habitat would not re-establish wildlife habitat values to pre-landfill conditions for many years, if at all.

**Mitigation Measure WBC-2:** Mitigation measures BBC-1 and BBC-2 would potentially replace wildlife habitat values through revegetation. However, residual impacts still would be considered significant because of the uncertainty inherent in habitat restoration and the amount of time required to restore wildlife values (shelter, food, and cover). The effectiveness of habitat restoration will depend on careful implementation of an effective restoration plan and continued management of the maintenance and monitoring effort.

**Impact WBC-3:** Expansion of the landfill into the back canyon would increase the amount of human presence and constant noise associated with landfill activities significantly farther north into Canada de la Pila Canyon. Expansion into the back canyon would have far-reaching impacts outside the immediate landfill area and could potentially lead to avoidance or abandonment of foraging and/or breeding habitat for a number of sensitive bird and mammal species that occur in the adjacent foothill habitats, including American peregrine falcon, San Diego woodrat, American badger, mountain lion, ringtail, and other species. Wildlife corridor function along the Canada de la Pila corridor may degrade as a result of landfill expansion into the back canyon. This impact is considered significant because of the potential to restrict movements of animals, such as red-legged frogs, during dispersal and foraging and through direct mortality or habitat degradation.

**Mitigation Measure WBC-3(a):** To protect oak/riparian habitat in the northern portion of the project site along Canada de la Pila, all ground disturbances, upstream of the back canyon sediment basins, shall be prohibited in a 50 foot setback from either side of the top-of-bank or oak/riparian vegetation canopy, whichever is greater, along Pila Creek, a sensitive riparian habitat area.
Plan Requirements and Timing: The riparian habitat area shall be shown on all grading and design plans prior to issuance of the Solid Waste Facilities Permit. 

Monitoring: SWUD shall ensure that the setback is maintained throughout the life of the project.

Mitigation Measure WBC-3(b): To minimize wildlife disturbance, night lighting used on the landfill site shall be of low intensity, low glare design, and shall be hooded to direct light downward onto the work area and prevent spill-over onto adjacent habitats. Use of artificial lighting during the months of October through March shall be minimized and used on an as-needed basis. Except on an emergency basis, artificial lighting shall not be employed prior to 6:00 a.m. or after 8:00 p.m.

Plan Requirements and Timing: SWUD shall include this measure as a component of the Solid Waste Facilities Permit that shall be submitted to the RWQCB and LEA/CIWMB for approval.

Monitoring: SWUD shall ensure compliance with this measure.

Residual Impacts: These mitigation measures will ensure the protection of the Canada de la Pila Creek corridor as a migration route for wildlife, however, residual impacts from human presence noise, and light associated with landfill operations would still be considered significant.

Class II Impacts: Significant Impacts that can be Mitigated to Less than Significant Levels

Botanical Resources:

Impact BBC-3: Expansion into the back canyon potentially would impact sensitive species on the west and northeast sides of the canyon on Vaqueros Sandstone.

Mitigation Measure BBC-3: A focused survey by a qualified botanist should be conducted to locate sensitive species, particularly regionally rare ferns, grasses, and shrubs that may grow on this substrate in areas to be cleared of native vegetation. In the event sensitive plant species are found during these surveys, the following measures shall be implemented:

   a) Plants shall be salvaged and/or propagules shall be relocated to an appropriate location in the Pila Creek watershed or the Baron Ranch, identified by the biologist.

   b) Transplanted or propagated plants shall be maintained at a 2:1 replacement ratio for a minimum of five years, or until the biologist determines that the plants have been successfully established (plants are vigorous, flower, and produce seed).

Plan Requirements and Timing: Prior to clearing of native vegetation, the area scheduled for clearing shall be surveyed by a County-approved biologist. In the event sensitive species are identified, a revegetation or restoration plan shall be developed that includes site identification for transplant/propagation, outlines transplanting/propagation procedures, and identifies maintenance and monitoring requirements, including contingency measures. Sensitive species identified shall be relocated prior to vegetation clearing.

Monitoring: The biologist shall maintain, inspect, and monitor the revegetation effort throughout the implementation and maintenance periods. SWUD shall ensure compliance with the plan.

Residual Impacts: No residual impacts are expected.

Impact BBC-4: Expansion into the back canyon would potentially result in the loss of riparian habitat and riparian trees.
Mitigation Measure BBC-4: Implementation of WBC-2 (b) would ensure that a 50 foot setback from Canada de la Pila is maintained and would avoid impacts to riparian vegetation along Canada de la Pila.

Impact BBC-5: Continued use of the landfill would result in transport of soil from the landfill slopes and disturbed canyon slopes into Canada de la Pila, and could create conditions favorable to the spread and propagation of undesirable, invasive species.

Mitigation Measure BBC-5: Erosion control measures shall continue to be implemented. Erosion control methods could include silt fencing, straw bales, hydroseeding, or sandbags in conjunction with other methods to prevent erosion. Hydroseeding, if used, shall be applied prior to the rainy season.

Plan Requirements and Timing: Annually, prior to each rainy season or as required in the RWQCB's WDRs, the SWUD shall prepare a wet weather preparedness plan that shall be submitted to the RWQCB identifying drainage system maintenance measures to be implemented prior to the rainy season throughout operations.

Monitoring: SWUD shall monitor surface water quality and stormwater runoff controls as required in the WDRs.

Mitigation measure WBC-2 (b) would also provide a vegetative buffer between the landfill and Canada de la Pila Creek that would provide erosion control.

Residual Impacts: Residual impacts would be less than significant with implementation of these mitigation measures.

Impact BBC-6: Fugitive dust from landfill operations in the back canyon could result in unanticipated mortality of oaks and other vegetation.

Mitigation Measure BBC-6: Dust generated by the landfill activities shall be kept to a minimum with a goal of retaining dust on the site and following the dust control measures listed below:

a) During construction, water trucks or sprinkler systems shall be used to keep all areas of vehicle movement damp enough to prevent dust from leaving the site. At a minimum, this would include hourly watering of unpaved roads.
b) Traffic speed shall be limited to 15 mph on unpaved roads.
c) Paved roads shall be maintained by vacuum sweeping twice weekly.
d) Soil stockpiled for more than two days shall be covered, kept moist, or treated with soil binders to prevent dust generation.
e) Use of seeding and watering to revegetate graded areas or spreading of soil binders in areas not in active use.
f) Monitoring wind speed and moving the working face to an area protected from wind when wind speed exceeds 25 mph.

Plan Requirements and Timing: SWUD shall include these measures as a component of the Solid Waste Facilities Permit that shall be submitted to the RWQCB and LEA/CIWMB for review and approval.

Monitoring: SWUD shall designate personnel to monitor wind conditions, implement the dust control program and order increased watering as necessary to prevent transport of dust off-site during operating hours of the landfill.

Residual Impacts: Residual impacts would be less than significant with implementation of these mitigation measures.
Wildlife Resources

*Impact WBC-4:* The existing landfill has a continual problem with gulls (*Larus* spp.) and American crows (*Corvus brachyrhynchos*) that concentrate in and around the landfill to forage and roost, including sources of freshwater such as the sedimentation basins in Canada de la Pila that are inhabited by California red-legged frogs. Crows are known to predate nestlings and eggs of a variety of other avian species, and harass foraging and roosting raptors (Dames & Moore 1995, 1996). The impact of gulls and crows on the red-legged frog larvae, subadults, and adults is unknown, but likely includes mortality due to predation and degraded water quality caused by the concentration of the large numbers of gulls around the in-channel sedimentation basins. Efforts to control gulls and crows with firecrackers and other noise-making devices on the existing active landfill have been ineffective.

*Mitigation Measure WBC-4:* Gull impacts to the southern in-channel basin where red-legged frogs occur can be reduced by reducing the attractiveness of the landfill to gulls by: (a) covering potential gull food sources, i.e., garbage; (b) reducing the attractiveness of the in-channel sedimentation basins as roosting sites by gulls, and; (c) by implementing a more aggressive gull control program. The in-channel basin can be made less attractive to gulls by habitat restoration, aimed at restoring a dense growth of riparian trees, shrubs, and aquatic emergent vegetation around the margin and nearshore waters of the southern basin. However, this effort will be compromised by artificial water withdrawals from this basin for landfill use, as well as periodic sediment removal activities. These conflicting issues will be addressed and resolved in the long-term red-legged frog management plan currently being prepared. To reduce nuisance birds at the landfill, a Bird Management and Monitoring Plan shall be developed. The plan shall include, but is not limited to, the following measures:

- a) Landfill personnel shall be dedicated to bird management and monitoring from dawn to dusk. Personnel shall be trained in bird identification and behavior.
- b) The working face shall be maintained as small as safely practicable, considering the types and number of landfill equipment operating.
- c) The working face shall be inspected regularly for cracks or fissures. Repairs to the working face shall be implemented as necessary.
- d) Extremely odiferous waste shall be buried as soon as possible after unloading.
- e) A periodic application a minimum of a 6-inch thick layer of compacted soil or an approved alternative daily cover (ADC) shall be applied during the day and/or at the end of each working day.
- f) The following actions to deter birds at the landfill shall include but not be limited to:
  1. Propane cannons and noisemakers.
  2. Gull and crow distress calls.
  4. Remote control airplanes.
  5. Overhead lines or wires.
  7. Flash tape and streamers.
  8. Balloons.
  9. Bird trainers (e.g., JUMPOTM)
  10. Raptors.
  11. Dogs.
- g) A depredation permit shall be obtained from the U.S. Fish and Wildlife Service and the California Department of Fish and Game. Use of lethal control shall be used as a final option, after the operator has demonstrated that that other management practices have been ineffective and in consultation with a professional biologist. Emphasis will be placed on non-lethal methods.
of management. Such actions shall be coordinated with the California Department of Fish and Game, U.S. Department of Agriculture Animal and Plant Health Inspection Service, and USFWS.

**Plan Requirements and Timing:** Prior to issuance of the Solid Waste Facilities Permit SWUD shall provide a Bird Management and Monitoring Plan to the Local Environmental Authority (LEA). The Bird Management and Monitoring Plan shall identify a hierarchy for use of all elements of the plan. A monthly monitoring report shall be prepared and submitted by SWUD and the LEA to track populations of gulls at the landfill. Use of elements in the plan will be periodically re-evaluated as bird populations fluctuate. Bird Management and Monitoring Plan elements shall be implemented throughout the project operation.

**Monitoring:** The LEA shall monitor bird management practices on a monthly basis.

**Residual Impacts:** With implementation of these mitigation measures, impacts due to concentration of gulls would be less than significant.

**Impact WBC-5:** The landfill expansion has the potential to remove habitat, including nests, of the San Diego desert woodrat.

**Mitigation Measure WBC-6:** A survey for the San Diego desert woodrat shall be conducted in rock crevices in mature chaparral prior to vegetation and/or soil removal. In the event that desert woodrats are found on the project site a capture and relocation effort shall be conducted to move individuals to suitable adjacent habitat.

**Plan Requirements and Timing:** Prior to clearing of native vegetation, the area scheduled for clearing shall be surveyed by a biologist familiar with desert woodrats. In the event woodrats are identified, a relocation program shall be developed that includes site identification for relocation, outlines relocation procedures, identifies monitoring requirements, success criteria, and contingency measures. Woodrats shall be relocated prior to vegetation clearing.

**Monitoring:** The biologist shall monitor relocated woodrats and provide an annual report to SWUD and USFWS as to status and distribution.

**Residual Impacts:** With implementation of these mitigation measures, impacts due to landfill expansion on desert woodrat would be less than significant. Other wildlife that may be effected by landfill expansion activities are expected to move away from the areas of disturbance to adjacent habitat areas.

**Class III Impacts:** Adverse, but Insignificant

There are no Class III impacts to biological resources resulting from the back canyon expansion configuration.

**Class IV Impacts:** Beneficial Impacts

There are no Class IV impacts to biological resources resulting from the back canyon expansion configuration.

**6.2.3 "No Project" Alternative**

Waste will continue to be generated and require management. Therefore, adoption of the "no project" option would automatically result in adoption of one or more of the following alternatives:

- (a) re-direct waste to another County landfill via rail or truck;
- (b) expansion of other County landfills to contain waste formerly directed to Tajiguis Landfill;
- (c) re-direct waste out of the County, and;
(d) adoption of alternative waste management techniques (in combination with another waste-disposal alternative).

The "No Project" option has previously been evaluated (McClelland Engineers, Inc., 1988). Several adjacent canyons along the Gaviota coast were evaluated as potential sites for a new landfill. These investigations found that impacts equal to or greater than those arising from operation of the existing landfill would occur if any other coastal location was selected. Consequently, expansion of the existing Canada de la Pila landfill site, which is already highly disturbed, was preferable to development of a new site for waste disposal purposes (McClelland Engineers, Inc., 1988).

6.2.4 Cumulative Impacts

Significance criteria for cumulative impacts to biological resources is based upon:

- the cumulative contribution of this project to fragmentation of open space in the project vicinity, and;
- the loss of sensitive habitats and species.

Proposed Expansion. Potential cumulative impacts include:

- (a) direct mortality to or loss or degradation of habitat for a listed plant or animal species;
- (b) loss of degraded annual grassland and coastal sage scrub vegetation;
- (c) loss of mature chaparral vegetation;
- (d) continued potential for introduction and establishment of non-native, invasive plants;
- (e) continued use of the landfill as a foci for gull and crow activity, with concomitant impacts to wildlife resources.

The back canyon portion of the landfill expansion contains extensive, moderate to high-quality vegetation and wildlife habitat, including the Canada de la Pila riparian corridor, well-developed coast live oak and California bay woodlands on east-facing slopes adjacent to this drainage, and mature chaparral on south- and east-facing slopes. In addition to significant direct impacts, the expansion will have significant indirect impacts to biological resources that could depress species diversity, population size, and habitat use. California red-legged frogs in particular would be affected. A long-term management plan for red-legged frogs that will replace the interim management plan (Appendix 5), under which the landfill is currently operating, will be prepared. Wildlife species that are habitat specialists or are species that require a large home range will likely alter or abandon use of the back canyon portion of the landfill because of these disturbances.

Overall, the cumulative impact of the expansion would result in significantly greater impacts to biological resources and would incrementally contribute to loss of habitat for sensitive plant and animal species, as well as extension of disturbance factors associated with landfill operations farther into the Canada de la Pila watershed.
7.0 LITERATURE CITED


Cardenas, M. 2000. Biologist, California Dept. of Fish and Game. Personal communication regarding distribution of steelhead on south coast of Santa Barbara County.


____. 1993. Post-construction surveys - Biological resource inventory. Exxon Santa Ynez Unit (SYU) Development, Corral and Las Flores Canyons, Permit Condition XIV-1, Santa Barbara County, California.


———. 1997. Endangered and Threatened Species: Listing of several Evolutionarily Significant Units (ESUs) of West Coast steelhead. Federal Register, 62(159).


Sandoval, C. 1998. Reserve Manager, Coal Oil Point Natural Reserve, University of California, Santa Barbara. Communication regarding distribution and ecology of insects endemic to the Santa Ynez Mountains. 29 August.

SBBG (Santa Barbara Botanic Garden). 1988a. Rare and/or Endangered Plants Listed by the California Native Plant Society or State and Federal Agencies. Upland Habitats of the Santa Barbara South Coast Area (between Point Conception and Ventura River, From the Summits of the Santa Ynez Mountains to the Coast).
1988b. Some Special Plants of Local Concern. Upland Habitats of the Santa Barbara South Coast Area (Between Point Conception and Ventura River, From the Summits of the Santa Ynez Mountains to the Coast).


____. 1996. Review of plant and animal taxa that are candidates for listing as endangered or threatened species. Federal Register 61(40): 7596-7613.


____. 1998e. Final rule to list the Gaviota tarplant and Lompoc yerba santa as Endangered. Federal Register, Vol. 63(60).


Wiskowski, T. 1988. Sensitive Plants of Santa Barbara County. Division of Environmental Review, Resource Management Department, County of Santa Barbara.
APPENDIX 1. NON-VASCULAR AND VASCULAR PLANTS OBSERVED IN THE PROJECT AREA
Acarospora sp.
Arthonia sp.
Caloplaca sp.
Caloplaca cerina (Hedwig) Th.Fr.
Candelaria concolor (Dickson) Stein
Chrysothrix candelaris (L.) J.R. Laundon
Evetria prunastri (L.) Ach.
Flavoparmelia caperata (L.) Hale
Flavopunctelia flaventior (Stirton) Hale
Hyperphyscia adglutinata (Flörke) H. Mayrh. & Poelt
Lecanora horiza (Ach.) Lindsay
Lecanora pacifica Tuck.
Lecanora cf. meridionalis H. Magn.
Opegrapha herbarum Mont.
Parmelia sulcata Taylor
Parmotrema austrosinense (Zahlbr.) Hale
Peltula euploca (Ach.) Poelt
Peltula sp.
Peltula obscurans var. deserticola (Zahlbr.) Wetmore
Phaeophyscia cernohorskyi (Nádv.) Essl.
Physcia ascendentis (Fr.) H. Oliver
Physcia caesia (Hoffm.) Furn.
Physcia stellaris (L.) Nyl.
Physcionia isidiigera (Zahlbr.) Essl.
Physcionia enteraxantha (Nyl.) Poelt
Psora pacifica Timdal
Pyrrhospora quernia (Dickson) Korber
Ramalina farinacea (L.) Ach.
Ramalina pollinaria (Westr.) Ach.
Ramalina leptocarpa or subleptocarpa
Rinodina dilatata Sheard
Sarcogyne similis H. Magn.
Usnea sp.
Xanthoparmelia cumberlandia (Gyelnik) Hale
Xanthoria fallax (Hepp) Arnold
Xanthoria polycarpa (Hoffm.) Rieber

C. Bratt
July 1998
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<th>Scientific Name</th>
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<td>P</td>
<td>CSS</td>
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<td>Giant stipa</td>
<td>Achimanthemum coronatum</td>
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</tr>
<tr>
<td>Navaretta</td>
<td>Navaretta arachnoidea</td>
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<td>A</td>
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<td>Tree tobacco</td>
<td>Nicotiana glauca</td>
<td>I</td>
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<td>CH, K, OW</td>
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<tr>
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<td>Pennisetum clandestinum</td>
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<td>N</td>
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<td>D, R</td>
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<td>H</td>
<td>CH, K, OW</td>
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<td>Polygynous interruptus</td>
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<td>Prunus ilicifolia</td>
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<td>Coast live oak</td>
<td>Quercus agrifolia</td>
<td>N</td>
<td>T</td>
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<tr>
<td>Redberry</td>
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<td>Lemonade berry</td>
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<td>Ribes malvaceum</td>
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<td>Blackberry</td>
<td>Rubus ursinus</td>
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<td>CSS, OW, R</td>
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<tr>
<td>Sheep sorrel</td>
<td>Rumex acetosella</td>
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<td>Curly dock</td>
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<td>D, R</td>
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<td>Salix exigua</td>
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<td>S</td>
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<tr>
<td>Arroyo willow</td>
<td>Salix lasiolepis</td>
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<td>S</td>
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<td>Arroyo willow</td>
<td>Salix lasiolepis</td>
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<td>Black sage</td>
<td>Salvia mellifera</td>
<td>N</td>
<td>S</td>
<td>CH, CSS, OW</td>
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<td>Salvia mellifera</td>
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<td>Sambucus mexicana</td>
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<tr>
<td>Selaginella</td>
<td>Selaginella sp.</td>
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<td>H</td>
<td>CH</td>
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<td>Senecio aster</td>
<td>N</td>
<td>H</td>
<td>CH</td>
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<td>Silene gallica</td>
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<td>Indian pink</td>
<td>Silene laciniata</td>
<td>N</td>
<td>H</td>
<td>CH</td>
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<td>6Milk thistle</td>
<td>Sillybum marianum</td>
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<td>Solanum douglasii</td>
<td>I</td>
<td>S</td>
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<tr>
<td>6Hoffmann's nightshade</td>
<td>Solanum hoffmannii</td>
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<tr>
<td>Prickly sow thistle</td>
<td>Sonchus asper</td>
<td>I</td>
<td>D</td>
<td>OW</td>
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<td>COMMON NAME</td>
<td>SCIENTIFIC NAME</td>
<td>N/I</td>
<td>HABIT</td>
<td>HABITAT</td>
<td>1988</td>
<td>1998</td>
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<tr>
<td>Sow thistle</td>
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<td>A</td>
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<td>Stachys bullata</td>
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<td>Stellaria media</td>
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<td>Toxicodendron diversilobum</td>
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<td>S</td>
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<td>California bay</td>
<td>Umbellularia californica</td>
<td>N</td>
<td>T</td>
<td>R</td>
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<tr>
<td>Canyon sunflower</td>
<td>Venegasia carpesioides</td>
<td>N</td>
<td>S</td>
<td>OW, R</td>
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<tr>
<td>Common vetch</td>
<td>Vicia sativa</td>
<td>I</td>
<td>V</td>
<td>D, R</td>
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<tr>
<td>^Vetch</td>
<td>Vicia sp.</td>
<td>I</td>
<td>A</td>
<td>D, OW, R</td>
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<tr>
<td>Periwinkle</td>
<td>Vinea major</td>
<td>I</td>
<td>V</td>
<td>OW?, R?</td>
<td>X</td>
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<td>Vulpia myuros</td>
<td>I</td>
<td>A</td>
<td>D</td>
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<td>Xanthium strumarium</td>
<td>N</td>
<td>A</td>
<td>D, R</td>
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<tr>
<td>Spanish bayonet</td>
<td>Yucca whipplei</td>
<td>N</td>
<td>P</td>
<td>CH</td>
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</tbody>
</table>

(Nomenclature follows Hickman, 1983).

1 N/I  
I = INTRODUCED SPECIES  
N = NATIVE SPECIES

2 HABIT
A = ANNUAL
P = PERENNIAL HERB
G = GRASS
PG = PERENNIAL GRASS
SS = SUB-SHRUB
S = SHRUB
T = TREE
V = VINE

3 HABITAT
CH = CHAPARRAL
CSS = COASTAL SAGE SCRUB
D = DISTURBED, RUDERAL
G = GRASSLAND
K = ROCK OUTCROP
OW = OAK WOODLAND
P = POND
R = RIPARIAN


5 SENSITIVE TAXON
CNPS 4 = "WATCH LIST".
LOCAL = LOCALLY REGARDED AS A SENSITIVE SPECIES
CALIFORNIA NATIVE PLANT SOCIETY  SANTA BARBARA BOTANIC GARDEN

6 INVASIVE WEED
APPENDIX 2. RESULTS OF MAY, 2000 FOLLOW-UP
SURVEY FOR SENSITIVE PLANTS IN THE
BACK CANYON PORTION OF THE LANDFILL
May 17, 2000

Larry Hunt
5290 Overpass Road, Suite 108
Santa Barbara, CA 93111

Re: Tajiguas Landfill Plant Survey, May 16, 2000

Dear Larry:

The predominant native vegetation that would be affected by the back canyon alternative is mixed chaparral. Where undisturbed, the chaparral is dense, with little or no understory. Big-pod ceanothus, chamise, and mountain mahogany (Cercocarpus betuloides) were the most common shrubs observed. Presumably, chaparral in Canada de la Pila has not burned since the Refugio fire in the early 1950s. Although not apparent, a number of annual and short-lived perennial species that typically follow fire are probably present in the seed bank.

Disturbed areas in the back canyon are increasingly dominated by veldt grass, a very invasive perennial grass. Yellow star thistle (Centaurea melitensis) and other widespread introduced grasses and forbs were common.

Sensitive plants that would be affected by the revised footprint for the back canyon expansion are coast live oak, Hoffmann's nightshade, and Santa Barbara honeysuckle. All these species are of local concern; none is listed by CNPS or any agencies. Camas lily (Zigadenus fremontii inxianus), another locally sensitive species, was not seen. This species typically follows fires; its apparent absence does not necessarily indicate the lily is not present.

No species listed by CNPS or state or federal agencies were found. Species most likely to occur are mariposa lilies. Catalina mariposa lily (Calochortus catalinae) should have been visible at the time of the survey. Late-flowering mariposa lily (Calochortus weedit var. vestus) is more likely to occur at higher elevations than in the revised project footprint. No individuals of Plummer's baccharis (Baccharis plummerae ssp. plummerae) were found, although this species does occur on the west side of the canyon.
Santa Barbara honeysuckle (*Lonicera subspicata* ssp. *subspicata*) was found near a coast live oak tree (*Quercus agrifolia*) along a sandstone outcrop below the back canyon access road as it climbs eastward out of the canyon bottom. Other associates were an interesting mixture of mesic and xeric species: rock dudleya (*Dudleya lanceolata*), selaginella (*Selaginella bigelovii*), bird's foot fern (*Pellaea mucronata*), goldenback fern (*Pentagramma triangularis*), seep monkeyflower (*Mimulus guttatus*), Yucca (*Yucca whipplei*), California bricklebrush (*Brickellia californica*), sugar bush (*Rhus ovata*), poison oak (*Toxicodendron diversilobum*). Veldt grass (*Ehrharta* sp.) was very common in the area.

Santa Barbara honeysuckle is a local endemic species. It was expected in Canada de la Pila, although has not previously been found there. According to the local flora, this species has been found as far west as Canada Las Flores on the south side of the Santa Ynez Mountains. Other records extend into northern Santa Barbara County.

Hoffmann's nightshade (*Solamum xanti hoffmannii*) is not recognized as a distinct entity in the Jepson Manual. This glabrous form of the common chaparral *Solanum* occurs fairly frequently along the Gaviota coast, usually in association with oaks or drainages. It is regarded as a locally sensitive species despite being subsumed in the recent treatment of the California flora. Approximately three individuals were seen in the deepest drainage above (north) of the back canyon access road. It occurs in association with other chaparral species: Big-pod ceanothus (*Ceanothus megacarpus*), chamise (*Adenostoma fascicularis*), and veldt grass.

Loss of both honeysuckle and nightshade could be offset by collecting seed, propagating to 1-gallon size, and planting out in suitable habitat in Canada de la Pila. Both would probably tolerate the riparian restoration area toward the mouth of the canyon as long as they were placed in shade and supplied with drip irrigation until well established. Transplanting is less likely to be successful. A 2:1 replacement ratio would be appropriate for these species.

Approximately 25 coast live oak trees would be lost if the landfill were extended into the back canyon as currently proposed. Coast live oaks are considered sensitive in Santa Barbara County. The replacement ratio for oak loss is usually 10:1.

Sincerely,

\[Signature\]  
Katherine Rindlauf  
Botanist
Addendum to the Biological Survey Report
For the
Tajiguas Landfill Expansion EIR
July 19, 2001

Introduction

A Biological Assessment was prepared for the Tajiguas Landfill Expansion Project in May 2001. Most of the fieldwork and literature reviews were completed in 1998. Additional fieldwork and literature reviews were conducted in May 2000 to address changes in the “footprint” of the proposed Landfill expansion. This report documents fieldwork conducted in the proposed “northern borrow site” for the Tajiguas Landfill.

Project Description

The proposed project is to expand the Tajiguas Landfill (Tajiguas) to provide up to 15 years of additional landfill capacity to meet the interim waste disposal needs of southern Santa Barbara County and the Santa Ynez and Cuyama Valleys while a new in-County regional landfill is developed. The expectation is that, once the new landfill is developed and operational, Tajiguas would be closed.

The proposed project consists of two potential landfill expansion configurations, herein referred to as the Front Canyon configuration and the Back Canyon configuration, one of which may be chosen as the proposed project by the Santa Barbara County Board of Supervisors. Both proposed configurations would occur on a portion above the existing landfill and in the areas north of the existing landfill, that are undisturbed, and that are currently being excavated for daily cover borrow material. The two expansion configurations are similar in aerial extent due to the limited area in the canyon to accommodate waste, stockpiles (borrow material), and other activities associated with landfill operations.

The northern borrow site that is the focus of this survey is located north of the green waste pad and east-west trending access road at the northern limit of disturbance associated with landfill and borrow activities. The northern borrow site would extend from the access road north to the access road to a well (P5) and from 100 feet east of Canada de la Pila Creek to the Landfill’s eastern fuelbreak.

Biological Resources

A biological survey was conducted on 19 July 2001 to inventory biological resources at the northern borrow site. A pedestrian survey was conducted along access roads and fuelbreaks. The interior of these areas was not directly surveyed, but observed with field glasses due to dense chaparral and steep slopes.

The northern borrow area faces south and is covered with dense chaparral, similar to that cited in the Biological Assessment, with scattered oak woodland and rock outcrops. Big-pod ceanothus (Ceanothus megacarpus) appeared to be the most common species, although green-bark ceanothus (Ceanothus spinosus), toyon (Heteromeles arbutifolia), laurel-sumac (Malosma laurina), black sage (Salvia mellifera), sugar bush (Rhus ovata), mountain mahogany (Cercocarpus betuloides), chamise (Adenostoma fasciculata), prickly phlox (Leptodactylon californicum), poison oak (Toxicodendron diversilobum), sticky monkeyflower (Mimulus aurantiacus), holly-leaved cherry (Prunus ilicifolia), and California buckwheat (Eriogonum fasciculatum) are scattered throughout the chaparral. Morning glory (Calystegia macrostegia spp. cyclostegia), clematis (Clematis ligusticifolia), and wild cucumber (Marah macrocarpus) were common, climbing through and over the shrubs. Rock rose (Helianthemum scoparium), deerweed (Lotus scoparius), bunchgrass (Nassella sp.) and everlasting (Gnaphalium spp.) were characteristic in openings, such as along roads and fuelbreaks.
Coast live oaks are scattered, rather uncharacteristically, on the south-facing slopes of the back canyon but are distributed parallel to sandstone bedding planes. Sufficient artesian water to support oaks may well up near the surface along fractures or bedding planes in the sandstone formations. Two sensitive species, Hoffmann's nightshade (Solanum xanti var. hoffmannii) and Plummer's baccharis (Baccharis plummerae ssp. plummerae), are associated with this community.

Rock outcrops support a greater number of herbaceous plants. Some are typical of this microhabitat, such as selaginella (Selaginella sp.), coffee fern (Pellaea andromedifolia) birds foot fern (Pellaea mucronata), California polypody (Polypodium californicum), and lance-leaved dudleya (Dudleya lanceolata). Others, particularly annual wildflowers, do not germinate in the shade and accumulated leaf litter beneath dense shrub cover. These include populations of annuals such as spineflower (Chorizanthe) and navaretta (Navaretta).

Reptile, bird, and mammal fauna tend to be relatively diverse in chaparral habitat. Some of the more common species expected to frequent scrub habitats within and adjacent to the project site include western fence lizard, side-blotched lizard, western whiptail, striped racer, common kingsnake, western rattlesnake, red-tailed hawk, common flicker, California thrasher, loggerhead shrike, wrentit, rufous-crowned sparrow, California quail, Anna's hummingbird, western kingbird, violet-green swallow, Bewick's wren, roadrunner, house finch, California ground squirrel, Merriam's chipmunk, Audubon's cottontail, brush rabbit, California pocket mouse, agile kangaroo rat, deer mouse, California mouse, desert woodrat, coyote, gray fox, bobcat, striped skunk, mountain lion, and mule deer. Wildlife observed in chaparral habitat includes: spotted towhee (Pipilo maculatus), wren tit (Chamaea fasciata), and western scrub jay (Aphelocoma californica).

Common mammals expected in the scattered oak woodlands in the northern borrow area include Botta's pocket gopher, Merriam's chipmunk, western gray squirrel, deer mouse, dusky-footed woodrat, California mouse, brush mouse, striped skunk, bobcat, mule deer, and black bear.

Rock outcroppings, especially those associated with canyon walls, provide important roosting and nesting habitats for vultures, hawks, falcons, owls, swallows, and a variety of other birds, although no evidence of nesting or roosting site in the rock outcrops were observed. The San Diego desert woodrat (Neotoma lepida intermedia), a State Species of Special Concern has been identified in the vicinity and may be present in the rock outcrop habitats.

Conclusions

Impacts to these habitats and associated wildlife would be similar to those identified in the Biological Assessment (Hunt 2001). Impacts would be considered significant due to the area of habitat potentially removed by the Tajiguas Landfill Expansion project and the length of time and uncertainty associated with re-establishing these habitat types at the landfill. Mitigation measures for each habitat type as listed in the Biological Assessment would reduce impacts to chaparral, oak woodland and rock outcrop habitat, but not to a less than significant level.
APPENDIX 3. WILDLIFE SPECIES OBSERVED DURING FIELD SURVEYS FOR THIS REPORT
Wildlife species observed in the project area during field surveys for this report. Inclusion in this list is based on visual or auditory sightings and sign (tracks, scat, burrows, etc.), as well as on museum records in the University of California-Santa Barbara Museum of Systematics and Ecology, the Santa Barbara Museum of Natural History (SBMNH) and the California Natural Diversity Data Base for the Gaviota, Tajigua, Santa Ynez, and Solvang quadrangles (CNDDDB, 1998). Day surveys were conducted between 0830 and 1700 hours on 24 April, 22 May, 11 August, 1998, and on 11 May and 16 May, 2000. Night surveys were conducted periodically between 2030 and 2345 hours from 10 June 1998 through June, 2000. The seasonal status of birds (Lehman, 1994), was rated as follows:

- **R** = Permanent resident in project area
- **S** = Summer resident
- **M** = Spring and/or Fall migrant to project area
- **W** = Winter visitor to project area

### Scientific Name | Common Name
--- | ---

#### INSECTS

- *Danaus plexippus*  
  Monarch Butterfly

#### AMPHIBIANS

- **Order Amura (Frogs and Toads)**
  - **Family Bufonidae**
    - *Bufo boreas*  
      Western Toad
  - **Family Hylidae (Treefrogs)**
    - *Hyla cadaverina*  
      California Treefrog
    - *Pseudacris regilla*  
      Pacific Chorus Frog
  - **Family Ranidae**
    - *Rana aurora draytonii*  
      California Red-legged Frog

#### REPTILES

- **Order Squamata**
  - **Suborder Sauria (Lizards)**
    - **Family Iguanidae (Iguanids)**
      - *Sceloporus occidentalis*  
        Western Fence Lizard
      - *Uta stansburiana*  
        Side-blotched Lizard
    - **Family Scincidae (Skinks)**
      - *Eumeces skiltonianus*  
        Western Skink
    - **Family Anguidae (Alligator Lizards and Allies)**
      - *Gerrhonotus multicarinatus*  
        Alligator Lizard
  - **Suborder Serpentes (Snakes)**
    - **Family Colubridae (Colubrid Snakes)**
      - *Thamnophis elegans*  
        W Terrestrial Garter Snake
### BIRDS

**Order Ciconiformes**
- Family Ardeidae (Heron)<br>  *Butorides striatus* | Green-backed Heron | R

**Order Anseriformes**
- Family Anatidae (Swans, Geese and Ducks)<br>  *Anas platyrhynchos* | Mallard | R

**Order Falconiformes**
- Family Cathartidae (Vultures)<br>  *Cathartes aura* | Turkey Vulture | M
- Family Accipitridae (Kites, Hawks and Eagles)<br>  *Buteo lineatus* | Red-shouldered Hawk | M,W<br>  *Buteo jamaicensis* | Red-tailed Hawk | M,W<br>  *Elanus caeruleus* | White-tailed Kite | M,W<br>  *Accipiter cooperi* | Cooper’s Hawk | M,W
- Family Falconidae (Falcons)<br>  *Falco sparverius*<sup>(*)</sup> | American Kestrel | M,W

**Order Galliformes**
- Family Phasianidae (Grouse, Quail and Ptarmigan)<br>  *Callipepla californica* | California Quail | R

**Order Charadriiformes**
- Family Charadriidae (Plovers)<br>  *Charadrius vociferus* | Killdeer | R
- Family Scolopacidae (Sandpipers)<br>  *Actitis macularia* | Spotted Sandpiper | M,W

**Family Laridae (Gulls and Terns)**
- *Larus argentatus* | Herring Gull | M,W<br>  *Larus occidentalis* | Western Gull | R

**Order Columbiformes**
- Family Columbidae (Pigeons and Doves)<br>  *Columba fasciata* | Band-tailed Pigeon | M,W<br>  *Zenaida macroura* | Mourning Dove | R

**Order Strigiformes**
- Family Tytonidae (Barn Owls)<br>  *Tyto alba* | Common Barn Owl | R
- Family Strigidae (Owls)<br>  *Bubo virginianus* | Great Horned Owl | R

**Order Apodiformes**
- Family Trochilidae (Hummingbirds)<br>  *Calypte anna* | Anna’s Hummingbird | R
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<td>Bombycilla cedrorum</td>
<td>Cedar Waxwing</td>
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Family Ptilognatidae (Silky Flycatchers)
  *Phainopepla nitens*  Phainopepla  M,W

Family Laniidae (Shrikes)
  *Lanius ludovicianus*  Loggerhead Shrike  M,W

Family Emberizidae (Warblers, Sparrows, Blackbirds and Orioles)
  *Dendroica coronata*  Yellow-rumped Warbler  M,W
  *Wilsonia pusilla*  Wilson’s Warbler  M
  *Pheucticus melanocephalus*  Black-headed Grosbeak  S
  *Pipilo erythrophthalmus*  Spotted Towhee  R
  *Pipilo crissalis*  California Towhee  R
  *Melospiza melodia*  Song Sparrow  R
  *Zonotrichia atricapilla*  Golden-crowned Sparrow  M,W
  *Zonotrichia leucophrys*  White-crowned Sparrow  M,W
  *Agelaius phoeniceus*  Red-winged Blackbird  R
  *Sturnella neglecta*  Western Meadowlark  M,W
  *Sturnus vulgaris*  European Starling  R
  *Euphagus cyanoccephalus*  Brewer’s Blackbird  R
  *Icterus galbula*  Northern Oriole  M

Family Fringillidae (Finches)
  *Carpodacus mexicanus*  House Finch  R
  *Carduelis psaltria*  Lesser Goldfinch  R
  *Carduelis tristis*  American Goldfinch  R

MAMMALS

Order Didelphimorphia
  Family Didelphidae (New World Opossums)
    *Didelphis virginiana*  Virginia Opossum

Order Insectivora
  Family Soricidae (Shrews)
    *Scapanus latimanus*  Broad-footed Mole

Order Chiroptera
  Family Vespertilionidae (Plainnose Bats)
    *Eptesicus fuscus*  Big Brown Bat

Order Lagomorpha
  Family Leporidae (Hares and Rabbits)
    *Sylvilagus bachmani*  Brush Rabbit

Order Rodentia
  Family Sciuridae (Squirrels)
    *Spermophilus beecheyi*  California Ground Squirrel

Family Geomyidae (Pocket Gophers)
  *Thomomys bottae*  Botta’s Pocket Gopher
Family Cricetidae (Mice)  
*Neotoma fuscipes*  
*Neotoma lepida*  
*Microtus californicus*  
Dusky-footed Woodrat  
Desert Woodrat  
California Vole

Order Carnivora  
Family Canidae (Dogs, Wolves and Foxes)  
*Canis latrans*  
Coyote

Family Procyonidae (Raccoons and Coatis)  
*Procyon lotor*  
Raccoon

Family Bassariscidae (Ringtails)  
*Bassariscus astutus*  
Ringtail

Family Mustelidae (Skunks)  
*Mephitis mephitis*  
Striped Skunk

Family Felidae (Cats)  
*Felis rufus*  
Bobcat

Family Ursidae (Bears)  
*Ursus americanus*  
Black Bear

Order Artiodactyla  
Family Cervidae (Deer)  
*Odocoileus hemionus*  
Black-tailed Deer
APPENDIX 4. RESULTS OF 1998 CALIFORNIA RED-LEGGED FROG SURVEYS
Results of field surveys for California red-legged frogs (*Rana aurora draytonii*) at County of Santa Barbara Tajiguas Landfill, Santa Barbara County, California.

Introduction

The following discussion summarizes the results of field surveys for California red-legged frogs as part of the evaluation of biological resources for the Tajiguas Landfill Expansion EIR/EIS. A complete project description is provided in the Biological Assessment.

Methodology

Diurnal and nocturnal surveys for frogs were conducted, in accordance with recommended U.S. Fish and Wildlife Service survey protocol (USFWS, 1997). This protocol requires an initial site assessment to determine if suitable red-legged frog habitat occurs in the project area. If suitable habitat is found, the assessment is supplemented with daytime larval and subadult surveys, and nocturnal adult surveys. The protocol states that surveys should be conducted at least 24 hours and possibly longer, before repeating surveys at the same site. Daytime surveys should be conducted on clear, sunny days. Night surveys should be conducted on warm, still nights between one hour after sunset and 12 midnight.

Day surveys focused on evaluating all wetland and riparian habitat in the project area, specifically the Canada de la Pila watercourse and adjacent upland habitat. Day surveys were conducted between 0830 hours and 1700 hours on 24 April, 22 May, and 11 August 1998. All accessible riparian habitat along Canada de la Pila was searched during each of the survey visits. The entire margin of the northern pond was surveyed. The steepness of the east and west walls of the southern sedimentation pond precluded shoreline searches on foot. The entire shoreline of the southern pond was searched by boat on 11 August 1998. Climatic conditions during each of these visits was similar, with clear to partly cloudy skies and southwesterly winds 0-10 mph, and daytime air temperatures ranging from 65-80 F.

Night surveys were conducted between 2030 hours and 2345 hours on 10 June and 2 July 1998. A powerful headlamp to detect eyeshine. A complete shoreline survey of the northern pond was made during each night survey. Only the northern and southwestern edges of the southern pond could be surveyed owing to the steepness of the remainder of the shoreline.

Day and night surveys were conducted by Lawrence E. Hunt, consulting herpetologist. Photographs of red-legged frog habitat conditions follow the text of this report.

Survey Results

Existing Habitat Conditions. Wetland habitat in the project area is restricted on the project area, consisting of several small to large seeps found along the east-facing slopes in the back canyon (northern) portion of the landfill, and the back canyon reaches of the Canada de la Pila watercourse. The latter contains significant red-legged frog habitat, in the form of two in-channel sedimentation ponds created by landfill personnel to contain sediment-laden runoff. Habitat values in the front canyon portion of this drainage have been severely degraded by landfill operations. Much of this reach
is culverted beneath the primarily landfill access road, and emerges between the landfill offices and scales into a severely degraded channel. From here, flows are conveyed along a channel running between and parallel to the Highway 101 north- and southbound lanes, then turns south to empty into the ocean. Riparian vegetation along the landfill portion of the watercourse is absent, although recent revegetation with willows is in progress. The reach between Highway 101 and the ocean is severely disturbed, with the canopy vegetation primarily provided by eucalyptus.

The riparian corridor along the back canyon is moderately disturbed by landfill operations, including construction and maintenance of the in-channel sedimentation ponds, and grading activities along the eastern edge of this corridor. It appears that this is not the original streambed, judging by its narrow character. The original streambed likely meandered across the floodplain to the east, but is now constrained by landfill activities. The riparian canopy along this reach is dominated by coast live oak with a scattered willow and forb understory. The watercourse steepens upstream and enters the foothills. Here the canopy changes to a mixture of coast live oak, California bay, and western sycamore, with scattered willows.

The sedimentation ponds were constructed about 1988 to capture sediment-laden runoff conveyed by Canada de la Pila during storm flows. Each year between 1988 and 1997 these basins were drained in a 12-36-hour period in early summer (May or June), and accumulated sediment was removed and used in landfill operations. Beginning in 1997, the southern pond was used as a temporary water storage basin for landfill dust control. Water in the northern pond was allowed to evaporate and percolate, and then sediment was removed as before. Between 12,000 and 100,000 gallons of water was pumped from the southern pond each day in 1997, depending on local climatic conditions. This practice emptied the pond by early August 1997. When dry, sediment was excavated from this basin, as before.

A man-made berm/access road separates the northern and southern ponds, which communicate via a 48-inch diameter culvert. The sedimentation ponds lie in a nearly vertical-walled canyon, the former Canada de la Pila. The west wall of the southern pond is bare rock projecting approximately 50 feet above the pond. The southern pond has an overflow culvert at its southwestern end to convey overflow to the underground portion of the watercourse. The southern pond contained extensive open water habitat when surveyed on 10 June. The surface of the northern pond, which contains most of the sediment and debris, was covered with floating debris (primarily bark and other woody debris) during all of the site visits. When surveyed on 3 August 1998 the southern pond had an area of open water measuring approximately 450 feet long by 160 feet wide, and a maximum depth of 17 feet. The maximum storage capacity of this pond is estimated by landfill personnel at 2,000,000 to 3,000,000 gallons. The northern pond measures approximately 250 feet long x 125 feet wide, with a maximum depth of less than six feet on 10 June 1998. By 11 August 1998, the maximum depth of the southern pond had dropped by one foot and the northern pond was less than two feet deep.

Maintenance activities in these ponds, specifically draining and sediment removal, has not allowed development of extensive aquatic and riparian shoreline vegetation. Consequently, red-legged frog habitat is limited to small patches of emergent vegetation and overhanging and submerged stick masses along the northern portion of the south pond and the southern portion of the north pond.

The Canada de la Pila watercourse in the project area provides marginal red-legged frog habitat. The sedimentation ponds provide good to excellent red-legged frog
habitat however, both of these ponds are currently subject to water and sediment removal, precluding vegetation development.

Results of Night Surveys. At least 11 large adult red-legged frogs were observed along the northern end of the south pond and the southern end of the north pond on 10 June 1998. Four of these individuals were observed either climbing a vertical rock wall at the northeastern corner of the south pond, or perched about 2-5 feet above the surface of the water on this wall. Other frogs were observed along the margin of the ponds, usually at sites where submerged stick masses protruded from the water or overhanging vegetation contacted the water surface, or in the culvert pipe between the two ponds. Positive identification was made by approaching at least three individuals to within two feet on the shoreline and noting the pronounced dorsolateral folds, typical of the species. None of the adults were calling. Adult western toads (*Bufo boreas*) and Pacific treefrogs (*Pseudacris regilla*) were observed in the same area. Males of the latter species were calling.

Eight adult red-legged frogs were observed in the same area of the southern pond on 2 July 1998.

Results of Day Surveys. No California red-legged frogs, egg masses, or larvae, were observed during the day surveys on 24 April or 22 May 1998. Three recently metamorphosed California red-legged frogs were observed along the western and northwestern margins of the southern sedimentation basin on 11 August 1998.

Discussion

The California Natural Diversity Data Base for the Tajiguas, Solvang, Santa Ynez, and Gaviota quadrangles lists eleven localities for California red-legged frogs between Goleta and Gaviota, including Arroyo Hondo and Arroyo Quemado, east and west of the project area (CNDDB, 1998). This report constitutes the first record of red-legged frogs in Canada de la Pila.

The existing age (size) distribution of the individuals observed in these ponds indicates that reproduction may have been successful, but recruitment of each years' cohort of frogs failed because the ponds were drained before metamorphosis could be completed. That recently metamorphosed individuals were observed on 11 August 1998 may reflect the fact that water was not allowed to be pumped from the south pond until 26 August 1998. By this time larvae from 1998 reproduction had the opportunity to metamorphose.

Current landfill operations have and will continue to have significant negative impacts to red-legged frogs at this location. The sedimentation basins are man-made and may require periodic maintenance (i.e., draining and sediment removal), if alternate management practices are not developed. A long-term frog management plan is currently being developed by Hunt and Associates. This plan depends upon construction of an out-of-channel sedimentation basin upstream and outside of the riparian corridor, as well as protection and restoration of the existing sedimentation ponds as red-legged frog habitat.
Figure 1. Active landfill area, looking northwest from east slope above landfill. Note heavily vegetated east-facing wall of back canyon in background. Sedimentation ponds at base of these slopes. 24 April 1998.
Figure 2. Southern (foreground) and northern (background) sedimentation ponds at capacity, looking north from primary landfill access road. Ponds are separated by access road berm. Basins occupy channel of Canada de la Pila Creek. Adult red-legged frogs were observed along the margins of this berm. 24 April 1998.
Figure 3. Southern pond from boat. Maximum depth of pond at pole (top center) was 16 feet at the time of this photograph. Note general lack of shoreline vegetation owing to past maintenance practices which rapidly removed water and accumulated sediment from these ponds. 24 April 1998.

Figure 4. Southern pond. Water level has dropped at least ten feet from that shown in Figure 2. Post-metamorph red-legged frogs were observed along the western and northwestern margins of pond. Note large numbers of seagulls around margin of pool, which use it as a night roost and freshwater drinking source. 11 August 1998.
APPENDIX 5. INTERIM CALIFORNIA RED-LEGGED FROG MANAGEMENT PLAN AND SEDIMENT REMOVAL RECOMMENDATIONS
Existent Conditions and Interim Management Recommendations for California Red-Legged Frogs at County of Santa Barbara Tajiguas Landfill

Imelda Cragin  
County of Santa Barbara  
Public Works Department, Solid Waste & Utilities Division  
109 E. Victoria Street  
Santa Barbara, California 93101  
11 August 1998

Dear Imelda,

A population of California red-legged frogs (*Rana aurora draytonii*), a State- and Federally-listed species, was found in two man-made ponds on Canada de la Pila within the Tajiguas Landfill boundary on 10 June 1998 (See Figure 1 - Tajiguas Landfill Site Plan). The night-time survey on this date located at least eleven adult frogs in and adjacent to the northern and southern ponds. Another night-time survey on 2 July 1998 found at least eight adult frogs in the southern pond. The northern pond was drying at the time of the latter survey and contains approximately two feet of water today.

Based on telephone conversations with Kate Symons, U.S. Fish and Wildlife Service-Ventura Field Office, as well as a site visit by Ms. Symons on 13 July 1998, the following information will assist the Service in determining the likelihood and magnitude of larval and/or adult frog mortality if pumping commences.

The ponds were constructed about 1988 to contain runoff and sediment during storm flows. The southern pond, which is the largest of the two, is approximately 450 feet long by 160 feet wide, with a maximum depth of about 17 feet on 3 August 1998 (maximum depth today was 16 feet). The storage capacity of this pond is estimated at approximately 2,000,000 to 3,000,000 gallons. Until 1997, the ponds were drained in early summer in 12-36 hours, then sediment was removed and the ponds readied for the next rainy season. Since 1997, the ponds have been used as a water source for dust control. Between 12,000 and 100,000 gallons per day (6-day work week) are pumped from this pond, depending on local climatic conditions, for use on the landfill. These practices emptied the pond by early August in 1997. Once dry, sediment was removed from both ponds.

When the southern pond is no longer a source of water, the landfill relies on stockpiled water from an adjacent groundwater well. Tajiguas Landfill Operations staff informed me that this well produces a seasonal average of approximately 12 gallons/minute, or approximately 17,000 gallons/day. This water is pumped into two storage tanks with a combined storage capacity of 750,000 gallons. At the reported production rates, it should take about 43 days to fill these tanks from this source.

Lawrence E. Hunt  
Consulting Biologist

5290 Overpass Road, Suite 108  
Santa Barbara, California 93111  
Phone: (805) 967-8512  
Fax: (805) 967-4633  
E-Mail: anniella@silcom.com
Because of the red-legged frog issue, the landfill staff has not removed water from either of the ponds. To date, they have relied on the stockpiled water for dust control. Consequently, this source has almost been exhausted. They need water from a source other than the groundwater well, or risk disruption of daily operations. The most cost-effective source are the ponds in Canada de la Pila Creek.

In response to requests by the Service for background information, I have enclosed the depth profiles of the south pond compiled by landfill staff on 28 July 1998. At that time the pond was approximately 450 feet long by 160 feet wide, with a maximum depth of 17 feet. Today, its dimensions are slightly less with a maximum depth of 16 feet. This decrease is attributable to evaporative loss; water has not been withdrawn for dust control purposes. The southern, eastern and western banks of this pond are quite steep. The northern side of the pond is sloping. The pond supports little aquatic emergent vegetation because of the rapid annual drawdown for landfill use. The steep topography of the basin in which the pond is situated makes it unlikely that larval frogs will be stranded by receding waters (see depth profiles).

Adult red-legged frogs were observed along the northeastern, northern, and northwestern borders of this pool during both the June and July surveys. The frogs were strongly associated with partially submerged stick masses and stick masses exposed on the banks of the pond in these areas. Three frogs were observed climbing the nearly vertical rock wall along the northeastern edge of the pond during the June survey.

A larval survey was conducted today between 0800 and 0930 hours. A small rowboat was used to visually survey the entire margin of the south pond. Red-legged frog larvae were not observed in the pond however, three recent metamorphs were observed along the western and northwestern margins of the pond. These metamorphs are the result of egg masses laid in early 1998. Again, it is important to note that the pond, typically dry by June or July in previous years, did not dry this year. This probably allowed the larvae to metamorphose. Draining the pond by early summer each year likely eliminated each year's cohort before they were able to metamorphose. Adult red-legged frogs probably breed each year but recruitment in previous years has likely been negligible. The fact that the pond is still intact by early August this year allowed the frogs to successfully recruit young.

The southern pond supports little shallow-water, aquatic emergent vegetation microhabitat favored by red-legged frog larvae. Because of rapidly declining water levels in past years. If left alone, the pond will support excellent larval and adult microhabitat, especially along the northern margin where the slope of the basin is reduced.

The County wishes to begin using this pond as a water source for landfill dust control as soon as possible. The following recommendations for use of the southern pond as a water source are designed to minimize the potential for larval stranding and adult frog mortality:

1. Pumping should not begin until after the larvae have metamorphosed into juveniles. This is typically late July to early August.
(2) Alternating use, (i.e., every other day), of the groundwater well with the pond, will greatly reduce the rate of pumping from the pond. The alternate water source, consisting of the groundwater well, should produce up to 120,000 gallons of water each week, based on the information supplied to me by Landfill staff. This production rate can supply the landfill with dust-control water for between two and ten days, depending on well production rates, daily water use, and local climatic conditions. Pumping from either source should occur in conjunction with use of other dust control measures, such as soil binding agents, in order to reduce the amount of water ultimately drawn from the pond. Together, these techniques will greatly increase the longevity of the pond and will ensure that at least a remnant pool remains until the next rainy season.

(3) I had a conversation with Landfill staff today regarding design features of the pump intake screen that will minimize or eliminate mortality to juvenile and adult red-legged frogs. The intake pipe will be placed within a floating, screened, 3 x 3 x 3-foot cage. The screen will be made of hardware cloth with a mesh size of 1/4-inch. The upper 12 inches of the cage will be covered with sheet metal flashing, extending above and below the water line and bent at 90 degrees to form a 6-inch lip around the top of the cage. The flashing will form a smooth surface which will prevent frogs from climbing into the cage from below. The cage will float in the center of the pond.

(4) Water removal from this pond should be stopped once the depth is lowered to four feet. This is the minimum water depth required by adults in a pond situation.

(5) I will monitor the condition of the pond every two weeks until the beginning of the rainy season (typically early November). Each monitoring session will consist of a diurnal and nocturnal survey designed to monitor adult and juvenile frog presence, water draw-down rates, and other environmental conditions that may affect frog mortality (e.g., increased seagull presence). I will report existing conditions and recommendations to Kate Symons, U.S. Fish and Wildlife Service, each month.

(6) These management recommendations will be superseded by a comprehensive California red-legged frog management plan currently being prepared. This plan will seek to balance landfill practices with the creation and maintenance of the southern, and possibly northern ponds as red-legged frog breeding and foraging habitat.

Given that past management practices have greatly reduced or eliminated tadpole and/or metamorph recruitment and ultimately reduced adult frog densities, anything that can be done to reduce the amount of water drawn from the southern and northern ponds on Canada de la Pila Creek will only help this species.

I will be preparing a detailed management plan for the County for the southern and northern ponds, as well as the Canada de la Pila drainage upstream from these ponds in August and September. This plan will focus on protecting the southern pond as foraging and breeding habitat for the red-legged frog by developing alternate water sources for landfill dust control use and abandoning the practice of draining and dredging the pond.
I recommend that the County submit this letter report to the Service and make a request for concurrence that, by implementing the conditions listed above, the potential for take of California red-legged frog larvae and/or adults is greatly reduced, and that pumping be allowed to proceed as soon as possible under the modified pumping and site monitoring plan described above.

Please call me at the number listed below, or Imelda Cragin at (805) 882-3613, if you have any questions or comments. I greatly appreciate your timely consideration of this request.

Sincerely,

[Signature]

Lawrence E. Hunt

encl: Fig. 1: County of Santa Barbara, Tajiguas Landfill Site Plan.  
Fig. 3: depth profile of south pond at Tajiguas Landfill, Santa Barbara County.
Lawrence E. Hunt
CONSULTING BIOLOGIST

Imelda Cragin
Santa Barbara County
Public Works Solid Waste & Utilities Division
109 East Victoria Street
Santa Barbara, California 93101

30 September 1998

RE: REMOVAL OF SEDIMENT FROM NORTHERN SEDIMENTATION BASIN IN BACK CANYON PORTION OF LANDFILL

Dear Imelda,

This letter addresses the concerns of the U.S. Army Corps of Engineers (ACOE) regarding biological impacts associated with annual maintenance of the northernmost sedimentation basin in the back canyon portion of Cañada de la Pila at the Santa Barbara County landfill site. I have reviewed your department's plans for maintenance of this basin and have made several recommendations which will reduce or eliminate potential impacts to sensitive biological resources, including the California red-legged frog (Rana aurora draytonii) which was recently found in this area.

1) Maintenance of this sedimentation basin is important because of its ability to slow down and trap sediment that would otherwise end up in the southernmost sedimentation basin. The latter basin is the site of red-legged frog aquatic habitat and is where most of the frogs were observed during surveys between April and August 1998. Several red-legged frogs were observed in the northern basin, but this was at a time when water levels in this basin were high. As the dry season progressed, the quality of aquatic frog habitat in this relatively shallow basin declined, until the water completely disappeared earlier this month. Consequently, red-legged frogs do not occur in this basin once it is dry. Again, maintenance of this basin will preserve habitat quality in the southern basin—a more important on-site habitat feature for red-legged frogs.

2) I will perform a daytime and nighttime survey of the basin the day before sediment removal is scheduled to begin.

3) I have instructed Public Works that I and a qualified County biologist monitor sediment removal for the duration of this activity. Specifically, the excavated portions of the basin are to be inspected prior to the beginning of work each day. Any red-legged frogs found during these inspections will be relocated to the southern basin.

4) Red-legged frogs move into adjacent terrestrial habitats in mid- to late fall. The upland bank habitat surrounding the northern basin will not be disturbed, and I will request that the excavation limits be fenced, if necessary, to reduce the potential for disturbance to terrestrial habitat.

5290 Overpass Road, Suite 108  Santa Barbara, California 93111

Phone: (805) 967-8512 Fax: (805) 967-4633
E-Mail: anniella@silcom.com
5) Excavation will begin at the northern end of the basin and proceed south. The construction equipment will enter the basin from the north, thereby avoiding impacts to wetland (cattail) vegetation established around the southern edge of the basin.

6) No live-forevers (*Dudleya*), sensitive or common, will be impacted by sediment removal activities. The Biological Assessment prepared by my firm documented that Blochman's dudleya (*D. blochmaniae* ssp. *blochmaniae*) is extremely unlikely in the project area (Pt. Sal is the nearest known locality). Chalk dudleya (*D. pulverulenta*), and lance-leaved dudleya (*D. lanceolata*), are relatively common on vertical rock walls well above the sedimentation basins in the project area, and will not be affected by sediment removal activities.

I am preparing a California red-legged frog habitat management plan for upper Cañada de la Pilà (i.e., the back canyon portion of the watercourse, including the sedimentation basins), which seeks to maintain the existing southern sedimentation basin as permanent, protected habitat for this species. This plan will depend on periodic maintenance of the northern sedimentation basin to maintain frog habitat in the southern basin.

I feel confident, given the poor quality of existing habitat in the northern basin together with the recommended level of mitigation and construction monitoring, that no take of red-legged frogs will result from this activity at this site.

Please forward this information to ACOE and feel free to call me if you need additional information.

Sincerely,

[Signature]

Lawrence E. Hunt
Lawrence E. Hunt
CONSULTING BIOLOGIST

Imelda Cragin
Santa Barbara County
Public Works Solid Waste & Utilities Division
109 E. Victoria Street
Santa Barbara, CA 93101

29 October 1998

Dear Imelda,

Here are my comments/insertions/deletions on your Categorical Exclusion Request:

1) p. 2, insert after para. 5: "A biologist will monitor placement of the culvert pipe and bank stabilization structures."

2) p. 3, insert after para. 1: "A biologist will monitor placement of streambank stabilization structures along Pila Creek."

3) p. 3, "Road Creek Crossing Bank Stabilization", insert after para. 2: "A biologist will monitor bank stabilization activities in this area, specifically, placement of rock rip-rap. If it is necessary to remove or reconfigure existing rock rip-rap at the downstream edge of the dirt access road creek crossing, the rock should be lifted slowly vertically from its current position and a biologist will inspect the areas beneath the rocks for California red-legged frogs. If frogs are found they will be captured and released into the southern pond on upper Pila Creek."

4) p. 3, "Drainage and Soil Stabilization Controls", change last sentence and elsewhere to read that, "...silt fence will be used in conjunction with hay bales to slow down surface runoff and contain sediment."

5) p. 3, "Existing Oak Tree Protection and Preservation", Change sentence beginning with "A biologist will...", to "In addition to monitoring bank stabilization activities and construction of the weir spillway, discharge culvert, energy dissipation structures, and berm/roadway, a biologist also will monitor placement of any fill or grading around the base of any existing oak trees." It is important that monitoring specifically be called out for the other activities in their respective paragraphs as I have indicated above.

Last sentence in this paragraph is vague. State that, "If any limbs of oak trees are broken during construction, they will be cleanly cut with a chain saw under the supervision of the monitoring biologist."

6) p. 4, "Soil Erosion Control and Environmental Enhancement", make sure that erosion control mix contains only the species we talked about on the phone. The mix should not contain the following species that were included in the "modified SLO" seed mix that Steve Ferry provided me. These prohibited species are: annual ryegrass, sierra oats, and orchardgrass. All are invasive, non-native species.
All revegetation efforts have a monitoring and remediation component. I recommend that you include an additional sentence at the end of para. 2 that states that, "An annual assessment of the hydroseeded areas will be conducted by a biologist and, if necessary, additional bank repair and hydroseeding will occur to remediate and establish native vegetation in erosion problem areas."

7) p. 4, "Calif. Red-legged Frog Protection", para. 1: The "No Take" permit allowed for removal of water from the southern in-channel sedimentation basin, not removal of sediment from the southern sedimentation basin. The management plan that I am preparing will address the issue of maintenance of the southern sedimentation basin, but for now, no maintenance of this basin can occur.

8) p. 4, "Calif. Red-legged Frog Protection", para. 2: Replace "The bank stabilization rock protection together...", with "Bank stabilization and revegetation upstream of the northern sedimentation basin will indirectly benefit the California red-legged frog by reducing sediment input into Pila Creek, creating potential refuge sites for frogs between boulders in the energy dissipation structure, and by promoting natural revegetation processes along the east bank of the creek. Primary reliance on the new out-of-channel sedimentation basin for catchment and control of sediments from upland sources, instead of the current in-channel sedimentation basins, will greatly benefit the red-legged frog population in upper Pila Creek by reducing the frequency of maintenance of these structures and by allowing the southern sedimentation basin to be managed as red-legged frog breeding and overwintering habitat."

9) p. 4, "Calif. Red-legged Frog Protection", after para. 2: "Vehicular traffic along the roadway on top of the berm is not expected to be a source of mortality to red-legged frogs because the berm and structures east of it are not attractive to frogs. A silt fence will be placed and maintained along the length of the top of the berm (except for the spillway), to reduce frog access to the roadway and out-of-channel sedimentation basin."

10) p. 4, "Calif. Red-legged Frog Protection", para. 3: Remove the words "some" and "may" from "...some silt fencing may be used...". Replace with, "Hay bales and silt fencing will be utilized at key points throughout the "Back Canyon"..."

11) p. 5, "California Red-Legged Frog Protection", para. 2: "A low silt fence will be placed and maintained along the top of the berm along the east bank of Pila Creek to deter red-legged frogs from entering the roadway and out-of-channel sedimentation basin. However, it is anticipated that some frogs, especially juveniles and subadults, which are known to range extensively from breeding sites, may be attracted to the new sedimentation basin when it contains water, and could gain access to this structure via the weir spillway or drainage culvert. Culvert access could be eliminated by making sure that the terminus of the culvert projects out in mid-air (say, two or three feet above ground), so that it will be very difficult for frogs to enter the pipe this way. There is nothing we can do about reducing or eliminating access via the weir spillway without defeating the purpose of the structure."

"The attractiveness of the out-of-channel sedimentation basin is seasonal, i.e., it will be dry for most of the year. If the basin holds water for more than a week during the rainy season, it should be inspected by a biologist for frogs prior to water release (i.e. daytime and nighttime survey). Water release should occur slowly (e.g., over a period..."
of days), so that frogs are not sucked into the drain pipe. Once dry, the basin should be inspected for frogs by a biologist (daytime survey) before any sediment removal or maintenance work is conducted. With this in mind, it is important that aquatic emergent vegetation such as willows and cattails not be allowed to establish colonies in this basin. The goal is to maintain this basin as unsuitable habitat for red-legged frogs."

Please call me if you have any questions.

Sincerely,

[Signature]

Lawrence E. Hunt
Ms. Imelda Cragin  
County of Santa Barbara  
Public Works Department  
Solid Waste Utilities Division  
123 E. Anapamu Street  
Santa Barbara, CA 93101  

RE: SWUD Project 120002—Sedimentation Basin Management Plan

28 September 1999

Dear Ms. Cragin,

I have reviewed the Draft Sedimentation Basin Work Plan (Revision No. 4, dated 10 September 1999), sent to me by Stephen Ferry, and have the following comments/recommendations:

1. Basin #1 (Southern In-Channel Basin). This basin supports a small, but apparently reproducing, population of California red-legged frogs (*Rana aurora draytonii*), a federally-listed species. Based on surveys conducted in 1998 and 1999, there are at least 13 adult frogs in this basin. Additionally, several juvenile frogs were observed in this basin in early 1999. The size of these juveniles indicated that successful metamorphosis occurred sometime in mid-summer 1998 from eggs laid in late winter/early spring 1998. Practically all of the observations of adult and juvenile frogs were made along the northern shoreline of the basin. Additional frogs may occur along other shoreline portions of the basin, but owing to the logistical difficulty of reaching these steep areas, systematic surveys of these areas have not been conducted.

It seems to me that this basin could be managed for red-legged frogs, while still allowing a reduced, but controlled level of management for sedimentation purposes. Currently, there appear to be several activities/issues related to operation of the landfill that directly or indirectly affect red-legged frogs in this basin, including sediment management and removal; water removal for dust suppression; and seagulls. These issues reduce the reproductive potential, survivorship, and population size of frogs, and may be reducing the known population through take and/or predation. I will address each of these issues separately.

a. Water removal. As per recommendations in my letter dated 11 August 1998, pumping of water from this basin for landfill use is only to occur after mid-July of each year in order to avoid potential impacts to egg masses and larval red-legged frogs. Water was to be removed on alternating days, in conjunction with water removal from wells/storage tanks located elsewhere on the landfill property. I recommended that water removal from this basin stop altogether once improvements in acquiring and storing water from this alternate water source were completed. It is my understanding that this source would be operational by Summer 2000.
Limiting water loss from this basin to seasonal evaporative water loss would create and maintain favorable habitat conditions for red-legged frogs, and indirectly reduce the problem of use of this water source by seagulls (see comments below under "Seagulls"). A shoreline habitat revegetation program, aimed at establishing a dense cover of native vegetation around the margins of this basin, would reduce or eliminate shoreline areas currently used as roost sites by seagulls.

b. Sediment management and removal. The Draft Sediment Management Plan describes sediment removal procedures conducted under Permit No. 95-50338-LM of Section 404 of the Clean Water Act, which expires on 2 October 2001. The permit authorizes the removal of a maximum of 10,000 cubic yards of sediment each year, down to a maximum depth of approximately 30 feet. Maintaining storage capacity of this basin by sediment removal is considered routine maintenance under Section 1601(e) of the Fish and Game Code and consequently does not require issuance of a 1601 Streambed Agreement on an annual basis.

The ACOE permit specifies that sediment removal activities be restricted to late summer/early fall, in order to minimize potential impacts during the breeding season for wildlife. The last sediment removal program occurred in 1996, and has been halted since the discovery of red-legged frogs in the basin in 1998.

Future basin-wide sediment removal activities would likely result in take of red-legged frogs and should be discouraged. The 48-inch discharge pipe that drains the basin, located in the southwestern corner of the basin, could be maintained via an existing access road. Sediment removal for this purpose would occur very infrequently (once per several year interval), and could be limited to a specific area around the existing opening of the drain opening. It is anticipated that the need for and frequency of sediment removal in Basin #1 will be greatly reduced now that Basin #3 (Back Canyon Out-of-channel Basin) has been created, and Basin #2 (Northern In-channel Basin) maintenance occurs on an annual, biannual, or less frequent schedule, as necessary.

Eliminating the need for sediment removal from this basin would allow all of the permitted disturbance limit to "waters of the United States", currently fixed at 0.9 acres, to be transferred to Basin #2 sediment removal (Northern In-Channel Basin).

c. Seagulls. Seagull use of the basin creates several problems for other wildlife, including frogs, and water quality. The large number of seagulls inhabiting the basin when it contains water may pose a real threat to larval and juvenile red-legged frogs through predation. Moreover, bird droppings, especially during the warmer months when water levels are seasonally low and birds are concentrated in the basin, may negatively affect water quality for frogs and other wildlife.

A natural seasonally fluctuating shoreline, in conjunction with a habitat restoration program, would allow aquatic emergent and emergent shoreline vegetation to proliferate, thereby reducing the areal extent of bare shoreline favored by seagulls as roost sites. The shoreline and nearshore environment should be planted with cattails, shrubs (e.g., coyote brush, Mexican elderberry, California blackberry, California wild rose, etc.), and trees (black cottonwood, sycamore, etc.). Establishing a self-maintaining, dense ground cover around the upper margins of this basin would discourage seagull roosting. Seagulls would probably continue to use the open water areas of the basin as a source of freshwater, but would likely be present in fewer
numbers than currently occupy the site, and could be controlled by alarm calls or noise-making devices. However, use of monofilament grids will likely result in unacceptable mortality of non-target passerine birds, such as swallows, blackbirds, hawks, and owls, etc.

2. Basin #2 (Northern In-Channel Basin). This basin was formerly the primary receptor for sediment eroding off the 110-acre soil borrow area of the landfill site, as well as sediment transported down the 150-acre upper watershed of Canada de la Pila. With the creation and maintenance of Basin #3 (Back Canyon Out-of-Channel Basin), only the latter inflows should be a significant source of sediment to Basin #2. Under the ACOE permit, a maximum of 13,000 cubic yards of sediment may be removed each year from this basin. Because red-legged frogs were observed in this basin in 1998, sediment removal was delayed until most of the surface water had disappeared (late summer/early fall). Sediment was excavated down to a depth of at least 25 feet from the northern half of this basin in October 1998. The southern half of the basin was not disturbed at this time and currently supports approximately 0.5 acres of wetland vegetation, consisting primarily of cattails (Typha sp.), sedges (Cyperus sp.), bur-clover (Xanthium strumarium), and mule-fat (Baccharis salicifolia), with a small amount of invasive, non-native vegetation, such as castor bean (Ricinus communis).

*Sediment Removal.* The remaining sediment in Basin #2 must be removed in order to maintain functional storage capacity. Eliminating the need for sediment removal in Basin #1 depends upon maintenance of Basin #2. The existing cattail, sedge, and mule-fat plants described above should be excavated by hand and transplanted to the shoreline of Basin #1, in areas specified by a qualified biologist. The plants (or cuttings) should be transplanted to areas that retain sufficient soil moisture levels year-round to promote growth, but not where they will be completely inundated when this basin is full.

It is anticipated that maintenance of Basin #3 (Out-of-Channel Basin), will significantly reduce the volume of sediment deposited annually in Basin #2, thereby reducing the amount of time required for sediment removal, and possibly allowing restoration of the upper banks of this basin. The southern edge of the basin (north of the existing dirt access road separating Basins 1 and 2), should be sloped at a stable angle to prevent collapsing the access road and de-stabilizing the northern end of Basin 1.

As stated previously, eliminating the need for sediment removal in Basin #1 would allow all of the permitted disturbance limit to "waters of the United States", currently fixed at 0.9 acres, to be transferred to Basin #2 for sediment removal (Northern In-Channel Basin).

3. Basin #3 (Back Canyon Out-of-Channel Basin). Creating this basin in 1998 significantly reduced sediment input from the 110-acre soil borrow area of the landfill site.

*Water Discharge.* Water accumulated in this basin is removed as soon as possible, in order to prevent potential occupation of the site by red-legged frogs when it contains water.
Of the four options for basin water discharge outlined in the Draft Management Plan, Options 2 and 4 are preferable. Option 1 should be avoided because it could introduce sediment into Basin #1 that otherwise would be trapped by Basins #2 or #3. Option 3, conducted during the 1998/99 rainy season, resulted in erosion of the dirt access road leading into Basin #2 and erosion of the banks of Canada de la Pila in the affected area. This may have increased sediment input into Basin #2 than what otherwise may have been the case if water was discharged over a stabilized surface.

Option 2 (discharging water into the north end of Basin #2) or Option 4 (discharging water onto ungrouted rock rip-rap placed within the bed and along the banks of Canada de la Pila at the base of the grouted spillway), would probably be the best way to de-water Basin #3 and minimize sediment input into Basin #2 from this source.

Sediment Removal. Sediment should be removed from Basin #3 at the end of the rainy season, after surface water is pumped out and as soon as heavy equipment can effectively work in the basin without getting stuck. This will prevent colonization of sediment by vegetation that would make it more attractive to wildlife.

Please call me if you require additional comments or have any questions.

Sincerely,

[Signature]

Lawrence E. Hunt
Lawrence E. Hunt
CONSULTING BIOLOGIST

Steve Ferry
Santa Barbara County
Public Works Solid Waste & Utilities Division
109 East Victoria Street
Santa Barbara, California 93101

7 January 2000

RE: REMOVAL OF SEDIMENT FROM NORTHERN AND SOUTHERN IN-CHANNEL SEDIMENTATION BASINS AT TAJIGUAS LANDFILL

Dear Steve,

This letter addresses the concerns regarding biological impacts associated with removing sediment from the northern and southern in-channel sedimentation basins in Cañada de la Pila at the Santa Barbara County landfill site. After discussing your department's plan for removing this sediment at our meeting at the site yesterday, I am offering the following recommendations to reduce potential impacts to the California red-legged frog (Rana aurora draytonii) and freshwater marsh habitat in the proposed sediment removal area.

Recent Surveys

I conducted a nighttime and daytime survey of the northern and southern sedimentation basins on 5 and 6 January 2000. According to the landfill supervisor, the southern sedimentation basin has been dry for approximately one month, and the northern basin has not held water since last spring. No California red-legged frogs were observed during these surveys; however suitable refugia were found in both basins. As water in these basins disappeared, the subadult and adult frogs that were observed here last spring likely sought refuge in suitable microhabitats in the vicinity of the basins. These refugia include the large, deep cracks that have appeared in the soil at the bottom of both basins. Many of these cracks are over 4 inches wide and two to three feet deep, and they contain moist soil at depth. I searched about 25% of these cracks during the nighttime and daytime surveys but found no frogs; however, all of the cracks should be searched for frogs. Although there is no surface water in either basin, sediment removal activities in the northern and southern in-channel basins has the potential to result in "take" of frogs that may have sought refuge from desiccating conditions in these soil cracks.

The following mitigation measures are offered to reduce these impacts:
Northern and Southern Basins:

1) I will perform a complete survey of all soil cracks immediately prior to initiation of sediment removal. Any frogs found will be captured and placed out of harm’s way under suitable refugia. Each night following sediment removal, the remaining soil cracks will be searched in preparation for the next day's work. Sediment removal, once initiated, should proceed as quickly as possible.

2) Myself or a qualified County biologist should monitor removal of the top four feet of soil or to the depth of the deepest cracks, whichever is greater, in both basins. Any red-legged frogs found during this monitoring will be relocated to suitable refugia adjacent to the southern basin.

Northern Basin:

There is a small amount of freshwater marsh habitat, i.e., cattails (Typha sp.), that have become established in the "perched" basin at the southern end of the northern basin. Sediment removal would eliminate this habitat from this location. Because this plant produces underground rhizomes, the plants can be salvaged, stockpiled, and reinstalled in the excavated basin once sediment is removed.

The top 12 inches of topsoil in the remaining basin will be salvaged and stockpiled outside the basin. Once stockpiled, the cattails should be covered with a 12-inch layer of topsoil and watered thoroughly once/week to prevent desiccation.

Within two weeks of salvage, the stockpiled plants and soil should be replaced in the excavated basin under supervision of a biologist. The material should be placed along the bottom and lower sides of the basin and should be watered at least once/day daily until the first significant storm.

Prior to 1997, the in-channel sedimentation basins were drained by mid- to late summer of each year and the accumulated sediment was removed in preparation for the next rainy season. Now that the out-of-channel sedimentation basin in the back canyon portion of the landfill has been constructed, most of the sediment coming off the landfill site will be intercepted before it reaches Cañada de la Pila and the northern and southern in-channel sedimentation basins. The current plan to excavate sediment from these basins will increase their storage capacity and will reduce the need for maintenance of the southern basin. Any habitat management plan for California red-legged frogs along Cañada de la Pila depends on maintaining the existing southern sedimentation basin as permanent, protected habitat for this species, and also will depend on periodic maintenance of the northern sedimentation basin to maintain frog habitat in the southern basin.

I feel confident that, given the recommended mitigation measures and construction monitoring, that the potential for "take" of red-legged frogs during sediment removal activities in these basins will be greatly reduced.

Please call me if you need additional information.

Sincerely,

Lawrence E. Hunt

[Signature]