FINAL
Environmental Assessment
Ranch View Terrace,
University of California, Santa Cruz

Prepared for:

U.S. Fish and Wildlife Service
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Acronyms and Abbreviations

CLR	cultural landscape report
CNDDB	California Natural Diversity Database
CRLF	California red-legged frog
EA	environmental assessment
ERC	Emergency Response Center
ESA	Federal Endangered Species Act
Farm	UCSC Sustainable Food and Agroecology Center
HCP	habitat conservation plan
HPSR	historic properties survey report
IA	Implementation Agreement
LML	Long Marine Laboratory
LPG Site	Site of proposed equipment storage building of the Emergency Response Center (ERC)
LRDP	Long Range Development Plan
MBUAPCD	Monterey Bay Unified Air Pollution Control District
MMP	Mitigation Monitoring Program
NAHC	Native American Heritage Commission
NCCAB	North Central Coast Air Basin
NEPA	National Environmental Policy Act
NRHP	National Register of Historic Places
OTB	Ohlone tiger beetle
PG&E	Pacific Gas and Electric
Plan Species	Ohlone tiger beetle and California red-legged frog
Proposed Action	Issuing an incidental take permit for the Ranch View Terrace site and approving the IA for the Ranch View Terrace HCP
SCMTD	Santa Cruz Metropolitan Transit District
SCWD	City of Santa Cruz Water District
SCWTP	Santa Cruz Wastewater Treatment Plant
Service	U.S. Fish and Wildlife Service
SWPPP	storm water pollution prevention plan
TDM	Traffic Demand Management
UBC	Uniform Building Code
UC Regents	Regents of the University of California
UCSC	University of California, Santa Cruz
UCSCPD	UCSC Police Department

Chapter 1

Purpose of and Need for Proposed Action

Introduction

This environmental assessment (EA) was prepared by the U.S. Fish and Wildlife Service (Service) pursuant to the National Environmental Policy Act (NEPA). It evaluates the request for issuing an incidental take permit under Section 10(a)(1)(B) of the Federal Endangered Species Act of 1973, as amended (ESA), for the construction and operation of the proposed Ranch View Terrace faculty housing development, construction and operation of the proposed equipment storage building for the Emergency Response Center, and proposed implementation of a Habitat Conservation Plan (HCP). Preparation and implementation of an HCP is a requirement of ESA Section 10(a)(1)(B); the proposed HCP is intended to offset negative effects to federally threatened and endangered species that could occur as a result of issuing the permit and construction and operation of the proposed facilities. The Regents of the University of California (UC Regents) are preparing an HCP for the activities listed above on the campus of the University of California at Santa Cruz (UCSC). Issuance of the incidental take permit constitutes a Federal action by the Service and is thus subject to NEPA, which requires that the environmental effects of all Federal agency actions be evaluated.

Purpose and Need for Action

Purpose for Service Action

The Service's purpose for this action is to provide for the best possible conservation of several federally listed species while responding to the UC Regents' application for an incidental take permit and proposed HCP implementation. If granted, the proposed incidental take permit would allow for incidental take of the federally listed Ohlone tiger beetle (*Cicindela ohlone*) and California red-legged frog (*Rana aurora draytonii*) (Plan Species), and would require implementation of an HCP to minimize and mitigate the take of listed species to the maximum extent practicable. The incidental take permit and HCP would be in effect for 60 years and would address incidental take that could occur during the construction and occupancy of the proposed housing development, ERC, access roads, utility corridor, and management and monitoring of proposed habitat preserves.

Need for Service Action

The Service's need for this action is to provide protection and conservation for listed, proposed, and unlisted species to the extent intended under ESA Section 10(a)(1)(B). Several decisions must be made in determining whether this need is met.

Decisions to be Made

Given the conservation needs of these species, the decision maker will decide whether or not to issue the incidental take permit. Discussions between the applicant and the Service during development of the HCP and incidental take permit proposals are conducted with the knowledge and understanding that specific criteria need to be met before a decision on permit issuance can be reached. The determination as to whether the proposed incidental take permit has met these criteria will be made after the EA and HCP are developed and subsequently revised based on public input. The determination as to whether the criteria have been met is described in the Service's decision documents consisting of an ESA Section 10 findings document, ESA Section 7 biological opinion, and NEPA decision document. These decision documents are produced at the end of the process. The criteria for each decision are described below.

ESA Section 10

The issuance criteria for an incidental take permit are contained in Section 10(a)(2)(B) of the ESA and again in the Service's implementation regulations for the ESA (50CFR 17.22(b)(2)(i)). The issuance criteria are:

- The taking will be incidental;
- The applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking;
- The applicant will ensure that adequate funding for the conservation plan and procedures to deal with unforeseen circumstances will be provided;
- The taking will not appreciably reduce the likelihood of survival and recovery of the species in the wild; and
- Such other measures the Service may require as necessary or appropriate for the purposes of the HCP.
- An applicant must prepare and submit to the Service for approval an HCP containing the mandatory elements of Section 10(a)(2)(A), before an incidental take permit can be issued. The HCP must specify:
- The impact that will likely result from the taking;
- What steps the applicant will take to monitor, minimize and mitigate such impacts, the funding available to implement such steps, and the procedures to be used to deal with unforeseen circumstances;

- What alternative actions to such taking the applicant considered, and the reasons why such alternatives are not proposed to be used; and
- Such other measures that the Director may require as being necessary or appropriate for the purposes of the plan.
- The ESA Section 10 assessments will be documented in Section 10 findings documents, which will be produced at the end of the process.

ESA Section 7

Issuance of an incidental take permit is also a Federal action subject to Section 7 of the ESA. Section 7(a)(2) requires all Federal agencies, in consultation with the Service, to ensure that any action "authorized, funded, or carried out" by any such agency "is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification" of critical habitat. Because issuance of a Section 10 permit involves a Federal authorization, it is subject to this provision. In this case, since the Service is the action agency, an internal consultation will be performed. Although the provisions of Section 7 and Section 10 are similar, Section 7 and its regulations require several considerations in the HCP process, specifically, indirect effects, effects on federally listed plants, and effects on critical habitat. The results of this internal consultation will be documented in a Biological Opinion, which will be produced at the end of the process.

NEPA

Issuance of an incidental take permit is a Federal action subject to NEPA compliance. The purpose of NEPA is to promote analysis and disclosure of the environmental issues surrounding the proposed Federal action in order to reach a decision that reflects NEPA's mandate to strive for harmony between human activity and the natural world. Although Section 10 and NEPA requirements overlap considerably, the scope of NEPA goes beyond that of the ESA by considering the impacts of a Federal action on non-wildlife resources such as water quality, air quality, and cultural resources. Depending on the scope and impact of the HCP, NEPA requirements can be satisfied by one of three following documents or actions: (1) a categorical exclusion; (2) an Environmental Assessment (EA); or (3) an Environmental Impact Statement (EIS).

An EIS is required when the project or activity that would occur under the HCP is a major Federal action significantly affecting the quality of the human environment, though an agency may produce an EIS at its discretion even in cases where significant effects are not likely to occur. An EIS culminates in a Record of Decision (ROD). An EA is prepared when it is unclear whether an EIS is needed or when the project does not require an EIS but is not eligible for a categorical exclusion. An EA culminates in either a decision to prepare an EIS or a Finding of No Significant Impact (FONSI). Activities that do not

individually or cumulatively have a significant effect on the environment can be categorically excluded from NEPA.

Context

Construction and operation of the Ranch View Terrace development and the equipment storage building of the Emergency Response Center, and HCP implementation could result in take of the federally listed California red-legged frog (CRLF) and Ohlone tiger beetle (OTB). Issuance of an incidental take permit would allow the covered activities in compliance with the ESA.

The Ranch View Terrace Project will increase the current supply of affordable on-campus housing for faculty and staff, which is now inadequate, based on the UCSC Long Range Development Plan's (LRDP) projections for planned growth in the campus population (University of California, Santa Cruz 1989). The proposed Ranch View Terrace Project and equipment storage building of the Emergency Response Center would partially implement the LRDP's program for campus growth to an enrollment of 15,000 students by 2005 by providing additional faculty and staff housing and emergency response services to support the growing campus population.

Through the development of the project, the UC Regents explored several conservation and management strategies to protect populations of OTB and CRLF on the UCSC campus, including project designs that could avoid take. An HCP was deemed the most beneficial for the university, because it would provide a conservation vehicle and project to facilitate implementation could occur.

The biological goals and objectives of the proposed HCP (Proposed Action Alternative) are described in detail in that document (Jones & Stokes 2004). The HCP also incorporates the following key elements.

- A description of the activities for which the take of the Plan Species would be allowed under the permit.
- Existing natural resources on the UCSC campus.
- Expected impacts on the Plan Species.
- Conservation principles and strategies central to the HCP and a description of expected outcomes for the Plan Species when the HCP is implemented.
- A monitoring plan that would gauge the success of the HCP and an adaptive management strategy that would ensure that management strategies continue to be improved, as their efficacy is field-tested.
- Information on HCP funding and implementation, a summary of requested assurances and changed circumstances, remedial measures that would be implemented to address such changes, and procedures for addressing unforeseen circumstances.
- An analysis of alternatives to the conservation strategy proposed in the HCP.

Background

Proposed Faculty Housing and Emergency Response Center

The UC Regents proposed the construction of the Ranch View Terrace development to supply 84 single-family homes to supplement the 130 units of faculty and staff housing now provided on campus. Because units would be sold at below-market rates, the Ranch View Terrace development would offer affordable housing options for faculty and staff, and would help offset demand on the regional housing market. The UC Regents also proposed to construct an equipment storage building on campus to support the proposed Emergency Response Center as well as existing campus land uses. Construction of additional faculty housing and the equipment storage building is intended to accommodate anticipated growth in the campus population, as projected and planned for in UCSC's LRDP. Each covered activity is summarized below. Chapter 2 describes the covered activities in detail.

Ranch View Terrace

The proposed Ranch View Terrace development occupies an area of approximately 13 acres and would be located at the southern edge of the UCSC campus, immediately west of the main campus entrance (Figures 1-1 and 1-2). It would occupy approximately the northern half of the parcel designated as Inclusion Area D[1] in the campus LRDP, extending beyond Inclusion Area D along two proposed access road alignments, one to the east of the project site and one to the north. The project site would also include two proposed utility alignments, one to the south, along the eastern edge of Inclusion Area D, and one to the southwest, through the Arboretum eucalyptus grove (Figure 1-2).

The following summarizes the objectives of the proposed Ranch View Terrace development.

- Support the achievement of the LRDP's housing goals by constructing the needed units on campus or at conforming off-campus locations.
- Provide faculty and staff housing in conformance with LRDP land use policies and land use designations.
- Locate and design housing units to support a sense of community and offer a high quality of life: select locations for development that are close to existing faculty and staff housing, provide an adequate number of units, and include onsite or local amenities such as open space, community facilities, and childcare.

[1] The LRDP identifies five "Inclusion Areas" on the UCSC campus and defines their purpose as supporting "University-affiliated, non-academic facilities advantageous to the functioning of the campus community."

- Provide faculty and staff housing in a cost-effective manner: minimize land costs, maximize densities, and develop sites served by existing utilities and roads.
- Locate faculty and staff housing to support the achievement of campus traffic management goals: select sites that support transit services and design to minimize commute and/or non–UC-related trips through the Campus Core.
- Locate and design new development to preserve the natural physical setting of the campus: develop areas that have previously been developed or partially developed or are degraded, and design new development to minimize effects on the natural setting.

Emergency Response Center Equipment Storage Building

The UC Regents propose to build an equipment storage building to support the Emergency Response Center. The storage facility would be located in a 0.2-acre area southeast of the Arboretum and adjacent to Empire Grade known at the "LPG site" because it was formally used for storage of liquid propane gas (Figure 1-2). Because of the proximity of the LPG site to Inclusion Area D, the UC Regents are requesting take coverage for the construction and operation of this equipment storage facility.

Habitat Conservation Plan

Construction and operation of the Ranch View Terrace development and the equipment storage building of the Emergency Response Center could result in incidental take[2] of the OTB (federally listed as endangered) and CRLF (federally listed as threatened).

Section 9[a][1] of the ESA prohibits take[3] of listed species. However, under the 1982 amendments to Section 10 of the ESA, the Service may issue a permit allowing incidental take if the project proponent submits an HCP and the HCP is approved by the Service. Consequently, in compliance with Section 10 of the ESA, the UC Regents are developing an HCP (Jones & Stokes 2004) addressing species that are federally listed as threatened or endangered and have the potential to occur in the project area. The UC Regents evaluated the biological resources on the project site and determined that the OTB and CRLF were the only federally listed species that could be affected by the proposed project. No species that are not presently listed, but could be listed during the permit term

[2] *Incidental take* is defined as take that is incidental to, and not the purpose of, an otherwise lawful activity (Section 10(a)(1)(B) of the Endangered Species Act).

[3] *Take*, as defined by the ESA, means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." *Harassment* is defined by the Service (50 CFR 17.3) as an intentional or negligent action that creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Service regulations define *harm* to include significant habitat modification or degradation which actually kills or injures wildlife by significantly impairing essential behavior patterns, including breeding, feeding or sheltering.

were identified as having the potential to be affected by the project. Therefore, the proposed HCP covers only the OTB and CRLF.

The proposed HCP was developed to support a permit application for incidental take of the Plan Species. For purposes of the HCP, the covered activities are construction, operation, and occupation of the Ranch View Terrace development, the equipment storage building of the new Emergency Response Center, and management and monitoring activities on new preserves Inclusion Area A and Inclusion Area D.

The Service has consulted the UC Regents, Service biologists, and experts on the Plan Species to raise the issues that are in the EA (i.e., scoping).

Chapter 2

Description of Alternatives, Including the Proposed Action

NEPA Section 102[2][E] requires Federal agencies to develop, study, and briefly describe alternatives to any proposed action with the potential to result in unresolved resource conflicts. This chapter describes the alternatives development process and presents the alternatives evaluated in this EA (the No Action Alternative, Proposed Action, Off-Campus Housing Alternative, and Reduced Housing Alternative). It also includes a summary of alternatives considered but not carried forward for EA analysis.

Alternatives and HCP Development Process

The Service along with the UC Regents and UCSC planning staff considered a full range of alternatives to meet the purpose and need of the proposed action. Various alternatives were considered to provide additional faculty housing and to avoid and minimize take of listed species, including the following.

- Constructing faculty housing in different locations within Inclusion Area D.
- Constructing fewer housing units or denser housing units (e.g., condominium-style housing) on a smaller area within Inclusion Area D.
- Constructing faculty housing on other campus sites designated for development in the LRDP.
- Constructing faculty housing on an off-campus site.
- Providing a subsidy to UCSC staff for off-campus housing.
- Alternative conservation measures, including alternative locations and sizes for the habitat preserves.
- Alternative locations for the Emergency Response Center Equipment Storage Site

Potentially suitable on-campus sites for the proposed faculty housing were identified based on the current LRDP. Three off-campus locations were identified through coordination with officials at the City of Santa Cruz and Santa Cruz County; discussion with community members; and a reconnaissance-level inspection of undeveloped parcels (see chapter 5, Agency Coordination and Public Involvement, for more information on coordination with agencies and the

public). Planning staff assessed the ability of available on- and off-campus sites to fulfill project objectives while minimizing project-related environmental and economic effects. This reconnaissance-level evaluation was based on factors such as:

- space available on the site and the number of housing units the site could feasibly support;
- access to the site; and
- site topography, slope stability, and drainage.

Based on this analysis, Inclusion Area D (Ranch View Terrace) was identified as the alternative site that would best meet the project purpose and need. Therefore, the proposed Ranch View Terrace HCP was developed for this site. Three other alternatives are considered in this EA, for a total of four alternatives:

- Alternative 1 (No Action). The Project does not go forward or the Service denies the permit.
- Alternative 2 (Ranch View Terrace). Construction and occupation/operation of the Ranch View Terrace housing and new equipment storage facility, Service approval of the HCP/IA, and issuance of an incidental take permit. This is the Proposed Action Alternative.
- Alternative 3 (Off-Campus Housing). Construction of the proposed housing project would occur at an off-campus location.
- Alternative 4 (Reduced Project). The UC Regents would construct fewer housing units on the Ranch View Terrace site than the Proposed Action.

Each Alternative is described in detail below.

Alternatives Analyzed in this EA

Alternative 1 – No Action

The No Action Alternative would be implemented if the UC Regents chose to abandon the covered projects because of funding issues, or unforeseen or extraordinary constraints or if the Service denied the 10(a)(1)(B) incidental take permit for Ranch View Terrace and the equipment storage facility at the LPG site. Permit denial could prevent the UC Regents from proceeding with the Ranch View Terrace development because of the chance that project construction and operation could result in take of Plan Species. Similarly, denial of an incidental take permit for the LPG site would prevent this site from being selected for the Emergency Response Center equipment storage facility.

In either scenario, failure to implement the projects would avoid all potential project-related impacts on listed species, including the potential for take of listed species.

Alternative 2 – Proposed Action

As described in Chapter 1, the proposed action would involve:

- construction and occupation/operation of new faculty housing in Inclusion Area D and construction and operation of a new equipment storage facility at the LPG site,
- approval of the proposed HCP incorporating conservation measures as described below,
- approval of the IA for the Ranch View Terrace HCP, and
- issuance of a permit under ESA Section 10[a][1][B] to allow incidental take of the federally listed OTB and CRLF.

Pending Service approval, 25.5 acres of the UCSC campus would be protected under a new land use designation, including 12.5 acres within Inclusion Area D adjacent to the development site, and 13 acres in Inclusion Area A. The protective designation would benefit the Plan Species and the campus' natural setting. Long-term management and monitoring of both new preserves for the benefit of the Plan Species would also be implemented. Funding is available both for implementing the HCP conservation strategy and for the development project as designed.

In summary, the UC Regents request take coverage for:

- construction and ongoing use of the Ranch View Terrace Project, including:
  - incidental take of Plan Species from construction activities,
  - capture and relocation of Plan Species from the construction site, if necessary, and
  - incidental take of Plan Species from ongoing use of the Project;
- construction of the Emergency Response Center equipment storage building and use of the site, including:
  - incidental take of CRLF from construction activities and ongoing use, and
  - capture and relocation of CRLF from the construction site, if necessary; and
- federally-permitted actions, including:
  - incidental take of OTB and CRLF on the Inclusion Area A Preserve during vegetation management activities, and
  - incidental take of OTB from presence/absence monitoring surveys on the Inclusion Area A and D Preserves.

The covered activities are described in more detail in the following sections.

Ranch View Terrace Development

As proposed, the Ranch View Terrace development follows the design concepts established by the UC Regents in the Inclusion Area D Master Plan and Design Guidelines (Moore, Ruble, Yudell et al. 2001). The development would be located on 13 acres in the northern portion of Inclusion Area D (Figure 2-1). The housing units, including buildings, carports, and streets, would occupy approximately 6.6 acres; landscaped open space would cover an additional 6.4 acres. The remaining 12.5 acres of Inclusion Area D would remain undeveloped.

Removal of Existing Uses On Project Site

Construction of the proposed faculty housing and associated infrastructure would require the removal of temporary farm plots A and B (approximately 3.0 acres in total) and a compost operation (approximately 0.6 acre) located on the northern half of the Ranch View Terrace site (Figure 2-1). Both areas would be cleared before construction, and as much as 5.4 acres of permanent research plots would be developed on unused sites adjacent to the south and east boundary of the UCSC Sustainable Food and Agroecology Center (Farm) (Figure 2-1). A rock debris pile that now covers about 1.7 acres on the Ranch View Terrace site would be available for use by the Developer (Valeo Ranch View Terrace I, L.P.); any remaining materials would be removed from the project site.

Project Construction

To assist future faculty recruitment efforts and limit the possibility of units being sold to the University or to the general public, project construction will occur in phases. The first phase will consist of most of the infrastructure, roads and 45 homes in the western portion of the site. It is expected that this phase will commence in summer 2005 with all construction being completed in fall 2006. Future phases will commence based on demand and recruitment needs, and will take place at the option of the campus, not the developer. Each subsequent phase is expected to require 8 to 9 months to construct.

Construction of the first phase of Ranch View Terrace is expected to last approximately 16 months. All rough site grading (i.e., for all three phases) would occur in phase 1 in the summer and fall to avoid the wettest portion of the rainy season. Construction activities associated with the development of the site include vegetation grubbing and clearing, grading, materials storage and transport, building construction, hardscape development (roads, bike lanes, and paths), and landscaping. . Phase 1 would build 45 of the total 84 homes with the remainder of the homes built in subsequent phases.

Immediately after rough grading of the phases 2 and 3 portion of the site, these areas will be hydroseeded with mix of native and non-invasive exotic grasses and herbs to minimize erosion. This vegetation cover will be maintained through

irrigation and additional seeding, if needed, until construction of the next phase of the housing project begins.

All construction activities would be restricted to the area of disturbance shown in Figure 2-1. A temporary construction barrier would be installed around the perimeter of the Ranch View Terrace site to keep construction vehicles and personnel away from sensitive habitats. Onsite equipment staging, parking, and materials storage would be restricted to the fenced area of the project site. Construction vehicles and personnel would access the site from Coolidge Drive.

Buildings

Current project plans call for a mix of two- and three-story homes to be built in 12 clusters along a proposed loop road (see *Access* below). A total of 84 two- and three-story for sale units would be constructed on 6.4 acres. A tot lot and outdoor play area would be developed within the outdoor space and would serve as an exterior extension for social activities. An informal grassland is planned to run through the center of the main building site. A portion of the main building site adjacent to the Farm would be developed into a community garden and outdoor meeting space.

Access

Primary access to the complex would be provided along the alignment of an existing gravel road that connects the site to Coolidge Drive. The existing road would be widened to 22 feet and paved (Figure 2-1). Primary vehicle access within the site would be provided by a 22-foot-wide loop road. A secondary emergency and service access road, approximately 12 feet wide with a compacted gravel surface, would be provided along the alignment of an existing unpaved road that runs between the Farm and the Arboretum. This road would link Ranch View Terrace to the Modular Village access road near Hagar Drive. Public use of the secondary access road would be controlled by locked bollards. In addition, a gravel, asphalt, or a polymer-based composite service road, approximately 10 feet wide, would be provided along approximately two-thirds of the utility corridor at the eastern boundary of the southern part of Inclusion Area D.

Bicycle lanes would be provided on the primary access road from Coolidge Drive. The secondary access road to the north would also be available for bicycle use. The main north–south campus bike path would be realigned to connect to the intersection of Coolidge Drive and the support road for the Campus Facilities complex, and the existing southbound bike path segment that connects to Coolidge Drive south of the Blacksmith Shop would be converted into a pedestrian path as part of the project. Bicycle parking would be provided in lockable exterior storage rooms within carports.

Pedestrian sidewalks would be provided along the main access road and on the interior of the loop road. Secondary internal pedestrian paths would also be

provided. Fences and gates would be constructed around most of the perimeter of the Ranch View Terrace complex to control pedestrian access into the Farm, the Arboretum, and the undeveloped portion of Inclusion Area D south of the housing development.

Landscaping

Undeveloped portions of the site, 6.6 acres, would be landscaped as open space for passive use. Additional landscaping would be provided within and adjacent to residential clusters, with an emphasis on drought-tolerant, low maintenance species. Existing trees would be retained as visual buffers along the north, west, and southwest boundaries of the site.

Stormwater Management

UCSC has adopted development guidelines that require the peak flow from the post-project 25-year storm to be maintained at the level of the calculated peak flow from the pre-project 10-year storm. To comply with the guidelines, the project includes three interconnected detention basins tiered on the hillside in the eastern side of the development site to minimize grading impacts, blending in with the surrounding topography. The storm drain system would have three main lines, each discharging into one of the basins so that utilization of the available detention capacity would be optimized. The basins would then use weirs to limit discharge to the receiving pipe system that flows into the City storm drain system on Empire Grade/High Street, which in turn discharges to Arroyo Seco.

In order to reduce the potential limitations of downstream infrastructure, two existing storm drain lines at High Street and Bay Street would be improved in conjunction with the project. In addition, in order to control potential water quality impacts from the development, sumps would be installed in the catch basins, to allow course sediment to settle-out during small storms for later removal. Oil-absorbent socks would also be installed on the catch basins and inlets collecting runoff from the roads and parking areas to minimize effects on water quality. Lastly, “T-inlets” would be installed in the catch basins and inlets to prevent oil and grease from being discharged during low-flow conditions. These on- and off-site stormwater management features were designed to minimize impacts to downstream resources such as those in the Arroyo Seco watershed.

Utilities

A utility corridor would run from the southeast corner of the project site along the east edge of Inclusion Area D, linking the project site to existing infrastructure and utility connection points, including a campus water pressure regulating valve. The corridor would be partially surfaced with an impermeable

material such as gravel, asphalt, or a polymer-based composite, providing an approximately 10-foot-wide utility service road.

A 2-inch-wide natural gas line would be installed in a separate utility trench constructed through a 10-foot-wide and approximately 500-foot long easement at the western edge of Inclusion Area D. The easement runs through the Arboretum's eucalyptus grove to an existing Pacific Gas and Electric (PG&E) line near Empire Grade at the Emergency Response Center equipment storage facility located on the LPG site.

Emergency Response Center Equipment Storage Building (LPG Site)

The UC Regents are proposing to construct an equipment storage building to support the Emergency Response Center (ERC). The storage building would be located on the 0.2-acre LPG site, located southeast of the Arboretum and adjacent to Empire Grade (Figure 1-2, 2-1).

The LPG site consists of a concrete pad surrounded by a chain-link fence. An earthen berm is located outside the chain-link fence on three sides of the site. These features would be retained. The hardscape pad and chainlink fencing could be expanded outward to the berm. The height of the berm would remain the same. Existing debris piles and other small structures would likely be removed to provide more room for equipment storage. A Butler (prefabricated) building approximately 3,400-square-feet in size would be placed on the site for equipment storage. In addition to storing equipment for the new Emergency Response Center, the site would continue to be used by UCSC maintenance staff for temporary storage of debris and landscaping material.

Implementation of the Ranch View Terrace HCP

Proposed Conservation Strategy (Proposed Action Alternative)

The conservation strategy presented in the Ranch View Terrace HCP is designed to avoid, minimize, and mitigate the impacts on the Plan Species from the covered activities, and to achieve specific biological objectives identified in the HCP. The conservation strategy is based upon:

- the level of impact to each species as a result of the covered projects and activities;
- the ecological requirements of the Plan Species;
- the conservation needs of the Plan Species (e.g., U.S. Fish and Wildlife Service 2001a, 2001b, 2002); and
- consultation with species experts and Service staff.

The conservation strategy includes five types of conservation measures:

- construction avoidance and minimization measures,
- project design elements that minimize impacts,
- habitat preservation,
- habitat enhancement,
- long-term habitat management and monitoring, and
- education of new Ranch View residents on the Plan Species and how they can avoid taking them.

Conservation measures were designed to provide a benefit to the Plan Species whenever possible. The following sections summarize each type of conservation measure, based on more detailed descriptions provided in the HCP (Jones & Stokes 2004).

Construction Measures

The UC Regents would implement a range of measures during all phases of the project construction to avoid and minimize impacts on Plan Species, including the following:

- Conducting preconstruction surveys to monitor for the presence of both Plan Species; if found, individuals will be relocated to safe locations.
- Developing and implementing an education program for construction workers on Plan Species and their needs.
- Removing vegetation and debris that may provide cover for CRLFs on the construction site using a specific protocol.
- Installing perimeter fencing around the active construction area to minimize disturbance to upland habitat outside the construction site by work crews and equipment. The purpose of this fencing is to exclude construction equipment but allow passage by CRLF.
- Minimizing the presence of standing water on the site and monitoring any unavoidable standing water that is present for the presence of CRLF.
- Removing trash from the site that may attract predators of CRLF on an ongoing basis.

The full suite of construction measures is incorporated by reference into this document and described further in the proposed HCP.

Avoidance and Minimization Measures

The UC Regents would implement avoidance and minimization measures to reduce the likelihood of take of the Plan Species and to support the biological goals and objectives identified in the HCP (Jones & Stokes 2004). They include the following design features and ongoing use restrictions.

- No ornamental ponds or other standing water sources would be constructed in the common areas of Ranch View Terrace that may attract CRLF.
- Drought-tolerant, low-water-use landscaping would be used in common areas, especially along the perimeter of the development, to minimize the attractiveness of the site to CRLF.
- Lidded waste and recycling receptacles that discourage foraging by predators of CRLF, such as raccoons (*Procyon lotor*), would be installed in common areas throughout Ranch View Terrace.
- Exterior lighting installed for the project in common areas would emphasize low intensity, focused, directional lights to reduce light spillage into adjacent open space to minimize disturbance of Plan Species and other nocturnal wildlife.
- The main loop road would primarily be built on the interior of the Ranch View Terrace site (the southern portion of the road is along the boundary of the proposed Project site), away from sensitive habitats, to minimize the chance of roadkill of CRLFs.
- Open fencing (e.g., stranded wire on "T" posts) would be installed at most of the perimeter of the project site to minimize pedestrian traffic through sensitive habitats in the Inclusion Area D Preserve.
- Graded but undeveloped portions of the site (phases 2 and 3) will be hydroseeded with a mixture of grasses and herbs. This vegetation cover will be maintained through supplemental watering or hydroseeding to eliminate any bare ground that may attract Ohlone tiger beetles to the area.
- Stormwater detention basins and an associated discharge system would be directed into stormwater drain infrastructure (as described above) to maintain the hydrologic conditions south of the Ranch View Terrace site and minimize or eliminate effects to water quality from urban runoff generated by the Ranch View Terrace Project.
- Custom signs would be installed and maintained at appropriate locations along the perimeter fence to educate the public about the habitat value of the undeveloped portion of Inclusion Area D.
- The utility corridor along the east side of the Inclusion Area D Preserve would be surfaced with an impermeable material such as gravel, asphalt, or a polymer-based composite to discourage use by OTBs for thermoregulation.
- Dogs and indoor cats would be allowed in Inclusion Area D under restricted conditions, enforced by the Campus Animal Control Officer. Dogs would be required to be on a leash at all times while outside. The area where dogs can be exercised would be clearly defined. Owners will be required to register their pets with the Campus Animal Control Officer. The Campus Animal Control Officer or Campus Police will conduct daily patrols of the Ranch View Terrace area. These restrictions are designed to prohibit cats and discourage dogs from entering the Inclusion Area D Preserve and harming or killing CRLFs.
- Maintenance staff would use pesticides and herbicides only in landscaped areas of Ranch View Terrace and will follow all label directions during

application. The application of herbicides and pesticides is not expected to affect CRLF because of its limited application and distance from known frog locations. However, the application of herbicides and pesticides cannot be covered by the Service and is therefore not a covered activity in the HCP.

- Any modifications to the common areas during Project use (e.g., landscaping changes) would be consistent with the restrictions and goals of the conservation strategy.
- The UC Regents will conduct monitoring before and during construction, and throughout the term of the permit on both Inclusion Area D and Inclusion Area A, with the purpose of avoiding and minimizing take and tracking the success of habitat management.
- UCSC land management staff will conduct take monitoring of the CRLF at the Ranch View site after rain events. If any frogs are found to be taken, the staff will contact the Service and include relevant information in the annual report.
- UCSC will provide information brochures to new Ranch View residents on the Plan Species and how take can be avoided.

Habitat Preservation, Management, and Monitoring: Inclusion Area A

California Red-Legged Frog

The primary conservation measure intended to mitigate project impacts on CRLF would be the preservation, in perpetuity, of 13.0 acres of grassland and forest habitat on University of California land adjacent to Wilder Creek (Figure 2-2). This site, called the *Inclusion Area A Preserve*, was chosen because of its high value for CRLF for dispersal and upland habitat and the presence of the largest population of OTB known in Lower Campus. Specific habitat preservation and management measures identified in the HCP for Inclusion Area A are summarized below.

Of the 13 acres within the Inclusion Area A Preserve, approximately 11 acres are located within Inclusion Area A and approximately 2 acres are on Campus Resource Lands.[4] A previous study concluded that Inclusion Area A could support between 235 and 255 dwelling units together with a public school (Turnbull et al. 1991). This high density of development was based on the site's proximity to utilities and easy access via Empire Grade, a public road. The proposed change in the site's land use designation would ensure the permanent protection of the high quality grassland and forest habitat that occurs there.

Mima mound and swale topography in and around the proposed Inclusion Area A Preserve would provide high quality upland aestivation and dispersal habitat for CRLF. The topographic low areas between the Mima mounds remain wet for extended periods during the winter and spring, providing moist resting habitat for

[4] *Campus Resource Lands* refers to properties not currently planned for extensive development in the LRDP but reserved for potential future development on campus. The two acres in the Campus resource lands associated with the IAA preserve will be protected in perpetuity, consistent with the HCP.

dispersing frogs. The wet areas also often facilitate the growth of native plant species and decrease the amount of nonnative weedy species. Such conditions increase the habitat value for CRLF.

The current vegetation management program would continue in all of Inclusion Area A, including within the Inclusion Area A Preserve, to maintain current conditions[5]. This program may include cattle grazing or other techniques such as mowing, raking, or grazing by other livestock species (e.g., goats). Current grazing practices and on-going trail use help to maintain suitable habitat for both Plan Species (see a description of this habitat in chapter 3). The vegetation on Inclusion Area A facilitates dispersal by CRLF by providing cover (i.e., protection from predators) and resting areas, while also allowing unhindered movement through the site.

As in the past, the grazing operation would be evaluated and adjusted each year at the beginning of the season with UCSC staff, the grazing operator, and scientific experts, as necessary, within the limits of the grazing lease. Additional vegetation management options would also be considered if and when the current vegetation management (cattle grazing) becomes ineffective or infeasible. A description of alternative vegetation management techniques and the evaluation and decision process for implementing them is included in the HCP.

Cattle are managed in Inclusion Area A by an independent contractor under a license agreement with the UC Regents. The license fee provides the funds for the labor and materials for fencing inspection and maintenance. The license agreement limits the grazing operator to 45 animal-unit-months (AUM) within the site. The current grazing schedule permits grazing in the Inclusion Area A Preserve site between July 1 and October 31 each year. Depending on site conditions, this area is grazed approximately 3 months each year by a herd of approximately 15 cattle (3 months x 15 cattle = 45 AUMs). The site may be grazed for a shorter or longer period with more or less cattle to achieve vegetation condition goals, with approval by UCSC. Horses or weaned calves can be substituted for adult cattle at ratios of 1.5:1 or 0.5:1, respectively. The UC Regents can revoke the grazing license at any time.

To ensure that the impacts of the grazing program are within that evaluated in the HCP, the Service must approve in writing any changes to the grazing program prior to its implementation if grazing within Inclusion Area A (and the adjacent Campus Resource Land) occurs before May 15 or after October 31 of each year or is more than four months in duration. The additional time at the beginning of the season will provide needed flexibility in grazing timing to benefit habitat for the Plan Species while still avoiding the adult activity period for OTB.

The grazing license agreement provides for flexible use of the site "in the interest of sound land management." UCSC land management staff will determine each spring the proper timing and stocking rate for the predicted site conditions that

[5] Livestock grazing on the Inclusion Area Preserve cannot be managed separately from the rest of Inclusion Area A because the preserve will not be fenced and 13 acres is too small an area for cattle to graze independently. Because of this limitation, vegetation in all of Inclusion Area A will therefore be managed with cattle based on the needs of the Inclusion Area A Preserve.

year and will coordinate with the grazing operator. UCSC staff may also consult with local scientific experts.

Current conditions of the vegetation on the Inclusion Area A preserve will be recorded and assessed through the monitoring program as described in the HCP. A Service-approved biologist will conduct annual quantitative vegetation monitoring to determine if the favorable site conditions for CRLF are being maintained. Vegetation condition will be measured by the biologist in permanent plots or transects and by a site-wide vegetation index. These values will be compared to the baseline condition established in the first year of implementation. UCSC land management staff will also visually monitor vegetation conditions during the grazing period to determine the optimal time to remove livestock from the area. All of these data will be used to design and guide vegetation management (e.g., grazing timing and intensity) through the adaptive management program to meet vegetation goals.

Land management of the Inclusion Area A Preserve will also include monitoring and removal of invasive exotic plants. If needed, patches where exotic plants were removed would be reseeded with native plants from seed collected on-site. Details of the exotic species removal program are found in the HCP.

Ohlone Tiger Beetle

Permanent preservation of the 13.0-acre Inclusion Area A Preserve (described above for CRLF and shown in Figure 2-2) would provide mitigation for impacts on OTB, which is known to occupy a total of approximately 0.1 acre of the proposed preserve. OTB have been documented in two distinct areas within the proposed preserve: along the north–south trail[6], in grassland at the edge of mixed evergreen forest; and along the south boundary fence[7]. Another approximately 0.1 acre of suitable but unoccupied habitat occurs along the east–west trail that traverses the preserve. These trails within Inclusion Area A are unpaved, and are used by pedestrians for recreational purposes. They are closed intermittently throughout the year during the adult activity period of the OTB. The population of OTB in the preserve is thought to be the northern edge of a larger, denser population on the adjacent privately owned ranch.

As described above, current vegetation management (cattle grazing) and recreational trail use by pedestrians would continue under the HCP to maintain the extent of bare and sparsely-vegetated areas. Additional options for vegetation management, including mowing, raking, or grazing with other livestock species (e.g., goats or sheep), will be considered if cattle grazing becomes ineffective or

[6] Three recreational trails are present on the Inclusion Area A Preserve, an east-west access road/trail and two informal trails. OTBs are found almost exclusively on these trails. UCSC policy allows pedestrian use in Inclusion Area A and the adjacent Campus Resource Lands but prohibits bicycle use of these trails at all times. Mountain bikers continue to use these trails illegally, despite patrols by UCSC police. During the adult activity period, UCSC installs temporary fencing and information signs to close the trails and to protect OTBs that use portions of the trails in the preserve. The information signs advise hikers of the need to avoid these areas. (This practice will continue as part of the HCP.)

[7] Due to the sensitivity of the species, precise locations of adult OTB or larval burrows are not included in the HCP or in the EA.

infeasible. A description of the evaluation process for these techniques is included in the HCP.

In conjunction with vegetation management, UCSC maintenance staff would control invasive exotic plants (and replant native species, when necessary) as described in the HCP. In addition, during the adult activity period of the OTB, UCSC would install and maintain temporary fencing and informational signs to protect the portions of the trail system in the preserve that are used by the beetles during the adult activity period. No other changes in management are proposed for Inclusion Area A. The existing conditions would be maintained through careful monitoring and adaptive management. Monitoring would include vegetation monitoring (as described above for CRLF), monitoring adult OTB annually, and a 5-year pilot monitoring study of the potential effects of cattle grazing on OTB larvae.

Habitat Preservation, Management, and Monitoring: Inclusion Area D

California Red-Legged Frog

The remaining undeveloped portion of Inclusion Area D (12.5 acres) will be preserved, 5.7 acres of which will be protected and managed as mitigation to benefit the OTB. The remaining 6.8 acres will be managed to benefit CRLF as temporary foraging and movement habitat even though CRLF are thought to use the site only rarely, if at all, as described in chapter 3. Vegetation in the Inclusion Area D Preserve will be managed to benefit CRLF and provide vegetation conditions similar to those found in most of the Inclusion Area A Preserve, except for the seep area. A higher density and height of vegetation will be maintained around the seep in order to provide additional cover for CRLF and other native species that may use the seep for temporary refuge. Because of the different habitat needs of CRLF and OTB, each portion of the Inclusion Area D Preserve will need to be managed differently. Because of the small size of the Preserve, cattle grazing may not be feasible, so other vegetation management techniques may need to be employed (e.g., grazing by sheep or goats, mowing, or raking).

Ohlone Tiger Beetle

Within the 12.5-acre Inclusion Area D Preserve, the UC Regents would manage 5.7 acres of upland grassland habitat within a designated Ohlone Tiger Beetle Management Area (Management Area) (Figure 2-3). Although this area currently provides no value for the beetles because of the dense accumulation of thatch on the soil surface, enhancement measures described below may improve habitat conditions and allow natural colonization. The overall goal would be to encourage colonization of the site by OTB by creating suitable habitat within the Management Area. Habitat would be created by reducing the amount of thatch and standing dead vegetation; providing bare areas suitable for OTB; decreasing the density of invasive nonnative grasses and herbs; and increasing the density and diversity of native grass and herb species in the Management Area. Because of the dynamic nature of invasive plants, the UC Regents propose the use of

management methods that are flexible and adaptable, possibly including hand-raking, mowing, and/or grazing by goats, sheep, or other livestock. An evaluation and decision-making process for choosing an appropriate vegetation management technique is included in the HCP. Ohlone tiger beetle presence/absence will be monitored annually on the site.

General Project Measures to Minimize Environmental Effects

The UC Regents have incorporated additional general measures into the proposed Ranch View Terrace project to minimize below significance the potential for adverse effects on the environment and natural resources (University of California, Santa Cruz 2003b). These measures, independent of the HCP, include the following design, construction, and operation features, described for the applicable resource topics.

Visual Resources

- Luminaires will be cutoff-type fixtures that case low-angle illumination to minimize incidental spillover of light onto adjacent properties and undeveloped open space. Fixtures that project upward or horizontally will not be used.
- Luminaires will be directed away from habitat and open space areas adjacent to the site of the proposed project.
- Luminaire lamps will provide good color rendering and natural light qualities. Low- and high-pressure sodium fixtures that are not color-corrected will not be used. Luminaire intensity will be the minimum necessary for traffic safety.
- Luminaire mountings will be downcast and the height of the poles will be minimized to reduce potential for backscatter into the nighttime sky and incidental spillover of light into adjacent properties and undeveloped open space. Luminaire mounts will have nonglare finishes.

Geology, Geologic Hazards, and Soils

- The Developer and all contractors retained by the Developer will follow recommendations of site-specific geotechnical investigations, including, but not limited to:
  - Excavating, removing, and relocating existing underground utilities that cross the project site such that they would not underlie the proposed structures;
  - Preparing and maintaining all cut and fill slopes to reduce erosion.

- Planting and maintaining the finished ground surface with ground cover to minimize surface erosion;
- Using concrete spread footings for the proposed building foundations; and,
- Using concrete slab-on-grade floors would be used for the proposed buildings, underlain by crushed rock.

- Design and construction will meet or exceed the requirements of the most recent version of applicable City codes and the California Building Code.
- The Developer will ensure that project design and construction adhere to accepted industry standards for good earthwork practices and meet or exceed all applicable codes and regulations to ensure that grading and fill activities do not create or contribute to slope failure hazard.

Hydrology and Water Quality

- A Stormwater Pollution Prevention Plan (SWPPP) will be prepared for the project, and will include measures to minimize erosion and runoff effects. Measures that may be required at the project site include silt fencing, covering large, open graded portions of the project site, and minimizing the area of disturbed land on-site at any given time. The plan will also require the contractor to prepare and implement a Spill Prevention and Response plan that will regulate the use of hazardous and toxic materials, such as fuels and lubricants for earthmoving equipment, throughout project construction.
- Design and construction of the project will adhere to all recommendations of site-specific geotechnical investigations and the site grading plan.
- Long-term erosion control structures will be placed on site, and additional post-construction measures will be implemented, as necessary, until landscaping became established and additional erosion control was no longer necessary.
- A recharge trench and recharge wells will be installed within the project area to provide sufficient volumes of recharge to the seep areas to compensate for recharge lost due to the construction of the proposed project. In addition, a groundwater collection, conveyance, and discharge system will be constructed to maintain the direction of shallow groundwater flows to the seep areas by routing shallow groundwater beneath the proposed community center parking lot and the roadway to the south and discharging it above, into the northern seep. Baffles will also be installed in the utility trench associated with the road immediately to the north of the northern seep to prevent short-circuiting of intercepted groundwater away from the seeps. In addition, almost all of the runoff from the project site will be rerouted into the storm drain system and directed away from the seeps so that only “clean” runoff from residential roofs, piped to the recharge trench and wells, will be used to replenish lost recharge.

Hazardous Materials

- The developer will be required to stop work on the site in the event that toxic or hazardous materials are encountered during construction, followed by Phase I, Phase II, and (if required) Phase III site investigations and/or appropriate remediation in accordance with Federal, state, and local requirements.

Biological Resources

Monarch Butterflies

- Prior to the onset of the migration season, and periodically throughout the migration season, a qualified biologist will conduct surveys to evaluate the use of the eucalyptus grove, located adjacent to Inclusion Area D and the LPG site, by monarch butterflies (*Danaus plexippus*). If monarch butterflies are found during periods of construction activity, the UC Regents will work with the biologist to determine the most appropriate mitigation strategy for noise and dust control to minimize effects on butterflies. Measures may include the avoidance of use of heavy construction equipment that produces strong vibrations and/or excessive dust and noise within 200 feet of occupied roosting habitat by monarch butterflies.

Raptors

- A qualified biologist will survey the project area, and adjacent lands, for raptor nests before construction begins. If nests are found within 250 feet of the proposed development area, construction would be postponed until the nest is no longer occupied.

Migratory Birds

- A qualified biologist will conduct surveys for migratory bird nests no more than 1 week prior to construction at the sites. The survey area will include a 300-foot radius around the proposed construction area. If nests are found, a 100 to 200-foot fenced exclusion area would be established around each nest[8]; all activities would be prohibited within the defined exclusion area until it was clear the nest was no longer in active use based on the species, nest condition, and time since last observed use. If the nest belonged to individuals of a special-status species, the California Department of Fish and Game or U.S. Fish and Wildlife Service would be consulted to identify appropriate protective actions.

[8] The typical exclusion buffer for an occupied migratory bird nest belonging to a common species is approximately 100 feet, but the buffer may be greater or lesser depending on the bird species and construction activity, as determined by the biologist.

Cultural Resources

Buried Cultural Resources

- If buried cultural resources, such as chipped or ground stone, historic debris, building foundations, or nonhuman bone were inadvertently discovered during ground-disturbing activities, work would stop in that area and within 100 feet of the find until a qualified archaeologist could assess the significance of the find, and, if necessary, develop appropriate treatment measures.[9]
- The construction contractor and lead contractor compliance inspector would verify that work is halted until appropriate treatment measures have been implemented.

Unidentified Human Remains

Implementation of the following measure, in accordance with state regulations governing treatment of human remains (PRC Sec. 5097), would be applied if unidentified human remains were discovered or recognized in any location other than a dedicated cemetery during ground-disturbing activities.

- No further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains would occur until the County Coroner was informed and had determined that no investigation of the cause of death is required; and, if the remains were of Native American origin,
  - the descendants of the deceased Native Americans have made a recommendation to the land owner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in Section 5097.98 of the California Public Resources Code; or
  - the Native American Heritage Commission was unable to identify a descendant or the descendant failed to make a recommendation within 24 hours after being notified by the commission.

According to California Health and Safety Code, six or more human burials at a single location constitute a cemetery (Sec. 8100), and disturbance of Native American cemeteries is a felony (Sec. 7052). Section 7050.5 requires that excavation be stopped in the vicinity of discovered human remains until the coroner can determine whether the remains are those of a Native American. If the remains are determined to be Native American, the coroner must contact the California Native American Heritage Commission.

[9] Treatment measures typically include developing avoidance strategies, capping with fill material, or mitigating effects through data recovery programs such as excavation or detailed documentation.

Noise

- Except under special circumstances, the normal working day for construction activities will be between the hours of 7:00 a.m. and 4:00 p.m., with no construction on weekends or major University holidays.
- Appropriate mufflers, silencers, and noise-control features for equipment will be required.
- Vehicles and other gas- or diesel-powered equipment will be prohibited from unnecessary warming up, idling, and engine revving.
- Except for mechanized impact tools, the use of mechanized equipment will be limited, if feasible, to those that would generate less than 80 dBA at a distance of 100 feet.
- A noise control monitor will be identified to monitor compliance with construction specifications related to noise abatement and to receive and mitigate noise complaints. A sign providing the name and contact information of the noise control monitor should be posted at the construction site. The noise control monitor will be responsible for mitigating conditions leading to noise complaints to the maximum extent possible.

Project Use

The Ranch View Terrace development is expected to house between 200 and 250 residents. Residential use of the site would include daily travel on the primary loop road, cycling and walking on paved bike and pedestrian paths, and passive recreational use of open spaces. Because the project would not include a commercial component, access and use of the site by nonresidents is expected to be low.

The UC Regents and the Developer would share responsibility for project management and maintenance. The UC Regents would retain responsibility for operation and maintenance of site utilities, roads, landscaped common areas, and the Community Center. The UC Regents would enter into a grounds lease agreement with the Developer for ownership, management, and maintenance of the apartments. Periodic maintenance activities would include building repairs and painting at rental properties; pest control; and landscape irrigation and maintenance.

In addition to daily access by residents and regular use by maintenance staff, the primary loop road would be used periodically by emergency (fire and police) and service (water, trash, recycling, sewer, and PG&E) personnel. Emergency and service vehicles might also use the secondary service road between the Farm and the Arboretum, although this use is expected to be infrequent; a locked barrier would prohibit residential use of this road. The utility connection points, including an existing campus water pressure regulating valve, would also require periodic inspection by service personnel. Service vehicles and pedestrian traffic would be allowed along the length of the loop road to an outlet on Bay Street.

Alternative 3 – Off-Campus Housing

Under Alternative 3, construction of the proposed housing project would occur at an off-campus location known as the Swenson Site. The 11-acre site is located on Shaffer Road, adjacent to the UCSC Long Marine Laboratory (Figure 2-4). In accordance with the City of Santa Cruz General Plan (City of Santa Cruz 1992, as amended) the proposed housing would be clustered within six acres on the site, and the remaining land would be used for open space and development setbacks. Therefore, the site would support a reduced number of housing facilities than that proposed. Based on the building program used for the Proposed Action, approximately 44 units would be constructed. The buildings would be the same heights as those proposed (two- and three-story homes and apartments). The site is designated as Low Density Residential in the City General Plan, and is zoned R-1-5 (Single Family Residential). The site is located within the Coastal Zone and would require a Specific Plan to implement a housing project. Access to the site is provided from Delaware Avenue, via Natural Bridges Drive and Mission Street, or Swift Street. Construction activities would include excavation, grading, and extension of utilities.

Because faculty and staff housing development at the Swenson Site would not fully meet project objectives related to the achievement of the LRDP's housing goals as they address the number of units needed; locating and designing faculty housing in a manner that supports a sense of community and a high quality of life; and locating housing to support the achievement of campus traffic management goals, this alternative is considered infeasible. This alternative is also considered infeasible because it did not meet the applicant's or the Service's needs for conservation of the species or construction. Nonetheless, this alternative is analyzed in Chapter 4 in comparison with the Proposed Action and the No Action Alternative.

Alternative 4 – Reduced Project on Inclusion Area D Site

Alternative 4 would entail constructing faculty housing within Inclusion Area D, but would provide for the construction of fewer housing units than the Proposed Action and would include less landscaped open space and fewer community-related amenities. Under this alternative, a total of 52 units would be constructed in the northwest area of the site. This alternative would not include the construction of a community center. The housing units would include 43 for sale units and nine one-bedroom rental apartment units. These buildings would be the same heights as those proposed (two- and three-story homes and apartments). Under this alternative, the ERC equipment storage facility would be constructed at the LPG site, which would be the same as that described for the preferred alternative (see *Alternative 2 – Proposed Action* above). Temporary farm plots A and B and the compost operation would still be relocated to sites adjacent to the south and east boundary of the Farm.

Like the Proposed Action, primary access to the complex would be provided along the alignment of an existing gravel road that connects the site to Coolidge Drive. However, the onsite loop road would be relocated to the north. Also like the Proposed Action, the secondary emergency access and service road would be provided along the alignment of an existing unpaved road that runs between the Farm and the Arboretum, and the main north-south bike path would be realigned.

This alternative would meet some of the project objectives, but would not fully meet objectives related to the achievement of the LRDP's housing goals as they address the number of units needed; locating and designing faculty and staff housing in a manner that supports a sense of community and high quality of life; and providing housing in a cost-effective manner. Therefore, this alternative is considered infeasible. This alternative is also considered infeasible because it did not meet the applicant's or the Service's needs for conservation of the species or construction. Nonetheless, this alternative is analyzed in Chapter 4 in comparison with the Proposed Action and the No Action Alternative.

Alternatives Eliminated from Further Consideration

The UC Regents considered several alternatives that were not carried forward for analysis in this EA. Reasons for eliminating alternatives from further consideration included the following:

- The alternative would not adequately meet project objectives.
- When compared to Inclusion area D, the alternative site was found to be less feasible for project construction.
- The alternative was assessed as likely to result in new or more severe adverse environmental and/or economic effects.

Several of the alternatives eliminated from consideration in this EA will be analyzed in more detail through the CEQA compliance process, which will entail preparation of an environmental impact report.

Reduced Footprint in Inclusion Area D

Construction of the same number of housing units as the proposed project within a reduced footprint of Inclusion Area D was also considered. This alternative would result in the construction of only three-story condominium or townhouse-style housing within a smaller area of Inclusion Area D than the proposed project. Although this alternative may result in a reduction in environmental effects, as a smaller area would be affected by project implementation, the mix of housing that the project would provide would not support the goals of the LRDP. The LRDP for the campus defines the mix of housing styles that should be provided throughout the campus to support campus faculty, staff, and students. Currently, condominium and townhouse style housing is available for staff, but there is a shortage of single-family structures to support the growing campus population. Therefore, in order to maintain an adequate mix of available housing

for campus faculty and staff, single-family structures must be constructed on campus. Providing this alternative form of housing on Inclusion Area D would require the provision of more single-family units in additional undeveloped parts of the campus, and construction and occupation of these units would result in additional incremental environmental impacts. The single-family structures that are proposed through the project would comply with the policies on housing development defined in the LRDP, and would provide opportunities for larger families to re-locate on campus to the new facilities, while providing additional available units within the existing condominium and townhouse style housing units.

The development of three-story housing in Inclusion Area D could result in adverse visual effects. The Proposed Action would include a mix of two- and three-story units, allowing for a mix of heights and mass. The development of three-story housing for the entire project on this site could conflict with LRDP visual resource guidelines that restrict the height and bulk of development within visually sensitive areas.

Although this alternative meets some of the project objectives, it would not fully meet objectives related to the achievement of the LRDP's housing goals as they address the number and style of units needed and locating and designing faculty and staff housing in a manner that supports a sense of community and high quality of life. Therefore, this alternative is considered infeasible because it did not meet the applicant's or the Service's needs for conservation of the species or construction.

Faculty Housing in Inclusion Area A

Inclusion Area A is a 45-acre grassland site located in the southern portion of campus at a distance from the Campus Core, and is adjacent to existing residential development in the City of Santa Cruz. This site is located within the Coastal Zone and is highly visible from adjacent residential developments and numerous area roads because of its location and the surrounding topography. This site is easily accessible from Empire Grade, and municipal utilities available at the site boundary could be extended onto the site to support development. However, the Inclusion Area A site supports a variety of sensitive biological, geologic, and hydrologic features, including coastal terrace prairie vegetation, seasonal wetlands, and a large sinkhole. In addition, OTB are known to occur in the southwest portion of Inclusion Area A, and the area is thought to provide the primary movement corridor for CRLF between an existing breeding pond in the UCSC Arboretum and locations where frogs have been observed in Wilder Creek/Cave Gulch.

Because of the location of sensitive resources on the Inclusion Area A site, only a comparatively small portion of the area could be developed. Construction of the proposed faculty housing on Inclusion Area A would be consistent with the LRDP land use designation for the area. However, adverse impacts on visual resources, land use, biology, and hydrology would likely be more extensive at this site than at the Inclusion Area D site.

Although this alternative would meet some of the project objectives, it would not fully meet objectives related to the achievement of the LRDP's housing goals as they address the number of units needed; locating and designing faculty and staff housing in a manner that supports a sense of community and high quality of life; providing housing in a cost-effective manner; and locating and designing new development to preserve the natural physical setting of the campus to the greatest extent possible. Therefore, this alternative is considered infeasible because it did not meet the applicant's or the Service's needs for conservation of the species or construction.

Faculty Housing Development in Inclusion Area E

Inclusion Area E is a 16-acre site located south of the West Remote parking lot, adjacent to Oakes College. It is well served by campus utilities, which would be extended onto the site to support development. The site is highly visible from the west campus entrance due to its location and the surrounding topography; to help reduce visual impacts on the west campus entrance, the boundary of the development area would be set back 100 feet from Empire Grade and from Heller Drive. However, because of constraints related to existing land uses within the inclusion area, and the limited size and location of the area that could feasibly be developed on this site, some impacts on visual resources would likely still occur. OTB are not known to occur on this site and no suitable habitat for this species is present on the site. However, this site is located adjacent to a side branch of Moore Creek. Portions of Moore Creek near Inclusion Area E are known to support CRLF. The Inclusion Area E site may provide a movement corridor between the branches of Moore Creek and the known breeding population located at the Arboretum pond. The site may also provide a movement corridor to the College Eight detention basin upstream, which may provide suitable breeding habitat for the frog. Grassland on Inclusion Area E may also be used for dispersal or aestivation.

Development of Inclusion Area E would remove most or all of the grassland on the site, reducing the available upland movement and aestivation habitat for CRLF by up to approximately 15 acres (as opposed to 7.5 acres on Inclusion Area D). Development on the site could occur on both sides of Moore Creek. Lights, pets, and human intrusion from the new development could disrupt or block movement of CRLF that may be occurring between the Arboretum Pond and the College Eight detention basin, an impact that would not occur on Inclusion Area D because riparian habitat is absent and no clear movement route occurs on the site. Development in Inclusion Area E along the creek would also reduce the habitat quality of the riparian forest for other native species of wildlife and plants.

Because only a part of Inclusion Area E could be developed with faculty housing, it would not be possible to construct the required number of housing units or to provide all the desired community-related amenities; a reduced project would be required. Construction of the proposed project on Inclusion Area E would be consistent with LRDP land use designation for the area. However, impacts on

visual and biological resources would likely be greater at this site than on Inclusion Area D.

Although this alternative meets some of the project objectives, it would not fully meet objectives related to the achievement of the LRDP's housing goals as they address the number of units needed; providing housing in a cost-effective manner; and locating and designing new development to preserve the natural physical setting of the campus to the greatest extent possible. Therefore, this alternative is considered infeasible.

Subsidy for Off-Campus Housing

As an alternative to constructing additional faculty and staff housing on campus, subsidizing off-campus housing for staff was also considered. Although this alternative could result in a decrease in effects on the environment on the UCSC campus because no additional construction on campus would be required as a result of project implementation, this alternative would not provide a long-term financially sound plan for UCSC because the university would have to continue to pay staff and faculty, in perpetuity, to subsidize housing costs within neighboring cities. In addition, this alternative would not increase the overall housing stock for the City of Santa Cruz, and therefore would permanently reduce the number of available housing units within the already growth-constricted city. In addition, this alternative would not fully meet project objectives related to locating and designing faculty housing in a manner that supports a sense of community and a high quality of life and locating housing to support the achievement of campus traffic management goals. Therefore, this alternative was considered infeasible because it did not meet the applicant's or the Service's needs for conservation of the species or construction.

Alternative Conservation Measures

In developing the conservation strategy for the HCP, UCSC staff considered a number of alternative conservation measures to avoid, minimize, and mitigate the potential take of CRLF and OTB from the Ranch View Terrace Faculty and Staff Housing Project. UCSC staff identified a wide variety of conservation options on campus that included avoidance and minimization measures, land preservation, habitat enhancement, habitat restoration, policy changes, and directed research. Each opportunity was evaluated based on its relative biological value to the Plan Species, its feasibility, and relative cost. Feasibility was defined as the likelihood of implementation given environmental and permitting constraints. Each opportunity was also evaluated as to whether it would adequately meet Service regulatory standards of the Endangered Species Act (i.e., minimize and mitigate the maximum extent practicable).

Avoidance and minimization measures that were considered but rejected included the construction of an amphibian exclusion fencing at the perimeter of the construction site to try to prevent CRLF from entering the site. This measure

was rejected by Service because of the uncertainty in the effectiveness of this technique. Depending on the material used, such a fence might concentrate CRLF against the fence, exposing them to predators. California red-legged frogs have been observed scaling a variety of vertical fencing surfaces, so it is not clear which design would be an effective barrier. UCSC also considered avoidance and minimization measures for the OTB such as spreading mulch over the construction site to discourage colonization by beetles. This technique was deemed infeasible because of the conflicts with the needs of the construction contractor and its very high cost.

UCSC considered habitat restoration conservation measures such as enhancing ponds to provide potential breeding habitat for CRLF, revegetating portions of creeks on campus, or creating ponds in suitable upland habitat. To provide additional habitat for OTB, habitat restoration was considered that included removing trees in areas of Watsonville loam (e.g., eucalyptus groves in Arboretum or conifers adjacent to Marshall Field). All of these alternatives were rejected because they were either infeasible (e.g., removing eucalyptus would remove habitat for Monarch butterflies), did not adequately mitigation for project impacts, were too costly given current UC budget constraints, or a combination of these factors.

Alternative sizes and locations of the Inclusion Area A Preserve were also considered but rejected. The Inclusion Area A Preserve was designed to maximize the benefits to both the Plan Species while providing mitigation that was proportional to the level of impact to each species. Smaller and larger preserves were considered but rejected because they were not proportional to the impacts to each species (7.5 acres of marginal upland habitat for CRLF, and no direct impacts to OTB habitat). A larger preserve was deemed infeasible because of the increased cost for management and monitoring, and because it would be inconsistent with the UCSC LRDP by precluding a substantial amount of development in Inclusion Area A. Alternative locations and configurations of the Inclusion Area A Preserve were considered, including a 13.0-acre preserve that extended along the southern boundary of campus. This “corridor” preserve would have linked the southwestern corner of campus with the small environmental reserve adjacent to and south of Empire Grade that includes a small section of Moore Creek. This alternative preserve configuration was rejected by the Service because there is no evidence that CRLF favor this area over other possible movement routes across Inclusion Area A. This narrow preserve would have included far fewer of the known occurrences and far less suitable habitat for OTB than the proposed design of the Inclusion Area A Preserve. The preserve would be only approximately 300 feet wide; this configuration would have far more perimeter (i.e., “edge”) than the proposed preserve, making management potentially more difficult and less effective.

No alternatives to the Inclusion Area D Preserve were considered because none exist. There are no other sites near the Ranch View Terrace project on campus that contain soils of the Tierra-Watsonville complex, that are undeveloped, and support vegetation that could be managed to potentially support OTB.

Alternative Locations for the Emergency Response Center Equipment Storage Building

UCSC currently stores emergency response equipment in the Hay Barn (4,940 assignable square feet), located in the southern portion of campus near the campus entry and directly east of the project. The Hay Barn is a contributing element to the National Register-eligible Cowell Ranch Historic District (University of California, Santa Cruz 2003b). The site contains bare ground and ruderal vegetation; no special-status plants or wildlife species have been found on the site. The site does not support suitable habitat for the Plan Species.

The barn structure has deteriorated and would require significant re-construction to provide a safe facility for the intended use. Under this alternative, the existing building would be removed and a replica unheated storage building would be constructed using a steel supporting structure and specially-milled redwood retrieved from trees cleared for another project on campus. Removal of the original building and construction of a replica could compromise the value of the hay barn as a historic resource. The site is highly visible from the main entry road on campus. The cost of rebuilding the hay barn ($691,000 in 2002 dollars) is significantly greater than the cost of the Butler building ($337,000 in 2003 dollars). This alternative was rejected because of the significance of the hay barn site as a historic resource, the visibility of the site from the historic core of campus, and the prohibitive cost of replacing the hay barn.

The proposed ERC equipment storage site (the LPG site) is already paved and used for storage of debris and other similar activities. The construction and use of this site may impact CRLF, but impacts are considered negligible due to the developed nature of the site and its marginal value for the species.

Chapter 3
Affected Environment

Introduction

This chapter describes those aspects of the environment on the UCSC campus that could or would be affected by issuance of an incidental take permit allowing construction and occupation/operation of the Ranch View Terrace development and the ERC equipment storage facility at the LPG site. This chapter focuses on existing conditions on and around the Ranch View Terrace site and the LPG site, with specific reference to the following topics.

- Physical environment – visual resources; air quality; geology, soils, seismic hazards, and mineral resources; hydrology and water quality; and hazardous materials.
- Biological environment – vegetation and wildlife.
- Social environment – cultural resources; land use; noise; population and housing; public health hazards; public services and recreation; and transportation and traffic.
- Conditions on the Inclusion Area A Preserve are discussed only as they relate to preservation or management activities described in the Ranch View Terrace HCP (Jones & Stokes 2004).

Physical Environment

Visual Resources

Inclusion Area D is located on a south-facing slope near the southern edge of the UCSC campus. Vegetation consists primarily of grasses, although shrubs are present on the northeast portion of the site and the north portion of the site supports cultivated fields. The site can be seen from various nearby vantage points, including short segments of Empire Grade; the intersection of Coolidge Drive and High Street; and segments of Coolidge Drive and Hagar Drive. The site is partially screened to the west by the Arboretum's eucalyptus grove and to the east by onsite shrubs. The site may also be visible from scattered locations throughout western Santa Cruz and from as far away as the Santa Cruz Municipal

Wharf. The site itself affords views of Santa Cruz in the foreground, with the Pacific Ocean as a backdrop.

The ERC equipment storage facility site is located adjacent to Empire Grade, and is largely screened from the road and adjacent residences by the existing earthen berm that surrounds the site, and by a dense grove of eucalyptus trees. The site is connected to Empire Grade by an asphalt driveway.

Inclusion Area D is located adjacent to a National Register–eligible historic district associated with past limestone quarrying and processing and agricultural activities. The district, described in detail in *Cultural Resources* below, includes a number of buildings, outbuildings, and ancillary structures. Inclusion Area D forms a rural backdrop to the historic district from some vantage points, most notably Coolidge Drive at the entrance to UCSC.

Inclusion Area A consists primarily of open grassland bordered by mixed evergreen forest. This area has been managed as open space, and is currently used for grazing. It offers a view of a quasi-natural landscape in the partially developed campus setting.

Air Quality

Regional Setting

The Santa Cruz area has a maritime Mediterranean climate. Winters are mild (typically 49–55º F), and account for most of the area's approximately 30 inches of rainfall annually. Summers are rainless but often foggy from May through July because of warm temperatures in California's inland valleys. Warmer temperatures (typically 58–63º F) occur from August through October, after the temperature of inland areas cools. Prevailing winds in the area generally blow from the northwest, influenced primarily by maritime breezes. These breezes are strongest in the spring and summer (Arkley 1963).

Santa Cruz County, including the UCSC campus, is located in the North Central Coast Air Basin (NCCAB), which also includes Monterey and San Benito Counties. Within the NCCAB, the Monterey Bay Unified Air Pollution Control District (MBUAPCD) is responsible for ensuring that the state and Federal air pollutant emissions standards (Table 3-1) are not violated.[10] The MBUAPCD develops and enforces air quality regulations for nonvehicular sources; issues permits; participates in air quality planning; and operates a regional air quality monitoring network.

[10] The state and Federal governments have established emissions standards for six "criteria" pollutants: carbon monoxide (CO), ozone, particulate matter less than 10 microns in diameter (PM10), oxides of nitrogen (NO_x), sulfur dioxide, and lead.

Table 3-1. State and Federal Ambient Air Quality Standards

Pollutant	Symbol	Average Time	Standard (parts per million)		Standard (micrograms per cubic meter)		Violation Criteria	
			California	National	California	National	California	National
Ozone	O_3	1 hour	0.09	0.12	180	235	If exceeded	If exceeded on more than 3 days in 3 years
Carbon monoxide	CO	8 hours	9.0	9	10,000	10,000	If exceeded	If exceeded on more than 1 day per year
		1 hour	20	35	23,000	40,000	If exceeded	If exceeded on more than 1 day per year
(Lake Tahoe only)		8 hours	6	NA	7,000	NA	If equaled or exceeded	NA
Nitrogen dioxide	NO_2	Annual average	NA	0.053	NA	100	NA	If exceeded
		1 hour	0.25	NA	470	NA	If exceeded	
Sulfur dioxide	SO_2	Annual average	NA	0.03	NA	80	NA	If exceeded
		24 hours	0.04	0.14	105	365	If exceeded	If exceeded on more than 1 day per year
		1 hour	0.25	NA	655	NA	NA	NA
Hydrogen sulfide	H_2S	1 hour	0.03	NA	42	NA	If equaled or exceeded	NA
Vinyl chloride	C_2H_3Cl	24 hours	0.010	NA	26	NA	If equaled or exceeded	NA
Sulfate particles	SO_4	24 hours	NA	NA	25	NA	If equaled or exceeded	NA
Inhalable particulate matter	PM10	Annual geometric mean	NA	NA	20	NA	If exceeded	NA
		Annual arithmetic mean	NA	NA	NA	50	NA	If exceeded
		24 hours	NA	NA	50	150	If exceeded	If average 1% over 3 years is exceeded
	PM2.5	Annual geometric mean	NA	NA	12	NA	If exceeded	NA
		Annual arithmetic mean	NA	NA	NA	15	NA	If exceeded
		24 hours	NA	NA	NA	65	NA	If average 2% over 3 years is exceeded
Lead particles	Pb	Calendar quarter	NA	NA	NA	1.5	NA	If exceeded no more than 1 day per year
		30 days	NA	NA	1.5	NA	If equaled or exceeded	NA

Existing Air Quality Conditions

Air quality conditions in the proposed project area and the larger NCCAB are characterized by monitoring data collected in the region. Based on these data, the State of California has identified the NCCAB as a nonattainment area for the PM10 standard and a moderate nonattainment area[11] for the 1-hour state ozone standard. In 1999, the Federal 8-hour ozone standard was exceeded at the Pinnacles monitoring station in San Benito County; however, exceedances were insufficient to result in classification as a nonattainment area. Air quality data from the local air quality monitoring stations in Santa Cruz and Davenport indicate that, during the last 3 years, the Santa Cruz area has not exceeded state or national hourly or 8-hour standards for ozone, state or Federal daily standards for PM10, Federal daily standards for PM2.5, national daily standards for CO, or state hourly standards for NO_x.

Sensitive Receptors

Sensitive air quality receptors in the immediate vicinity of the proposed project include UCSC students, faculty, and staff who study, work, or live on campus; campus visitors and recreators who use the facilities and amenities UCSC provides; and residents of the campus and communities located in the immediate vicinity of UCSC.

Geology, Geologic Hazards, and Soils

Geologic Setting

The UCSC campus and the City of Santa Cruz are situated at the southeast end of Ben Lomond Mountain, an important ridge in the Santa Cruz Mountains, which in turn make up the west-central portion of California's Coast Ranges geologic province (Norris and Webb 1990). West of the San Andreas fault zone, the core of the Santa Cruz Mountains uplift consists of Paleozoic–Mesozoic intrusive and metamorphic rocks. These "basement" units are flanked on the west by faulted marine sedimentary strata of Miocene age (24–5 million years old) through Pliocene age (5–2 million years old) (Wagner et al. 1990, Brabb 1997).

Bedrock underlying the UCSC campus consists primarily of Paleozoic–Mesozoic metasedimentary rocks, including carbonates, which locally contribute to the development of karst features and karst hydrology (see related discussion in *Hydrology* below). Miocene shallow-marine sedimentary strata are also exposed

[11] Pursuant to the 1990 amendments to the Federal Clean Air Act, the U.S. Environmental Protection agency designates areas that fail to meet Federal air quality standards for ozone as *marginal*, *moderate*, *serious*, *severe*, or *extreme* nonattainment areas, based on the degree of exceedance. The Clean Air Act also establishes specific deadlines by which each type of nonattainment area must attain the ozone standard, with later deadlines for areas that are more polluted. Moderate nonattainment areas are required to demonstrate attainment with the ozone standard by November 1996, unless they are granted an extension.

near the campus' northern boundary (Brabb 1997). Bedrock units are unconformably overlain in some parts of the campus by Quaternary materials, including marine and fluvial terrace deposits, landslide deposits, and colluvium (Warrick 1982, Brabb 1997).

Bedrock in the immediate vicinity of the proposed project site consists of biotite- and muscovite-rich schist with interlayered quartzite. Neither marble bedrock nor karst topography has been reported at the proposed project site (Pacific Crest Engineering 2002). Detailed site-specific geologic data are not available for the LPG site or Inclusion Area A.

Geologic Hazards

Seismicity and Seismic Hazards

No faults recognized by the State of California as active traverse the UCSC campus. Consequently, the risk of surface rupture associated with active faulting is minimal for the campus, including the proposed project site and the LPG site (Hart and Bryant 1997, Pacific Crest Engineering 2002).

However, the UCSC campus is located in relatively close proximity to several of the region's principal faults. Both the San Andreas fault, approximately 18 kilometers northeast of the campus, and the San Gregorio fault, 13–15 kilometers to the west, are recognized as active by the State of California and have been zoned pursuant to the state's Alquist-Priolo Earthquake Fault Zoning Act (see Hart and Bryant 1997); both are considered Type A faults under the most recent version of the Uniform Building Code (UBC) (International Conference of Building Officials 1997).[12] Other important faults in the vicinity of UCSC include the Monterey Bay-Tularcitos system southwest of campus, the Zayante-Vergeles system northeast of campus, and the Sargent fault to the east. None of these three faults has been zoned by the State of California, but all are likely active; all three are identified as Type B faults by the UBC.[13] The Ben Lomond fault, located 2–3 km east of campus, is not zoned by the State of California or recognized by the UBC as active. Because of its proximity to a number of major active faults, the UCSC campus, including the proposed project site and LPG site, is likely to experience strong groundshaking during the life of the project (Pacific Crest Engineering 2002).

The State of California has not yet issued seismic hazard maps for the any of the quadrangles in the project vicinity (see California Geological Survey 2003). However, shallow subsurface materials underlying the proposed project site were judged unlikely to be liquefiable, and the potential for ground failure as a result

[12] Under the Alquist-Priolo Earthquake Fault Zoning Act, faults that show evidence of activity within the past 11,000 years are considered active; construction in the corridors (Earthquake Fault Zones) along active faults is strictly regulated. The UBC uses the Type A classification to identify the state's most significant active faults; among other characteristics, these structures are considered capable of producing earthquakes with Richter magnitudes in excess of 7.0.

[13] Type B faults are significant active structures considered capable of producing earthquakes with Richter magnitudes of 6.5–7.0.

of liquefaction at the site has been evaluated as minimal (Pacific Crest Engineering 2002).

Landslide Hazards

As described above, the State of California has not yet published seismic hazards mapping for the project vicinity, and no quantitative analysis of slope stability has been performed for the Inclusion Area D project site or for the LPG site (Pacific Crest Engineering 2002). Topography in the immediate vicinity of the Inclusion Area D site is gently rolling, with slopes less than 10 percent. Existing risk of slope failure, including seismically induced landslides, has been evaluated as low for the gentle slopes of the immediate project site (Pacific Crest Engineering 2002). Steeper slopes are present along the east edge of Inclusion Area D and around the LPG site.

Soils

By contrast with much of California's central coast, the UCSC campus supports unusually thick, iron-rich soils, probably because of the local climate's humidity and warmth. A detailed soil survey conducted in the early 1960s identified 27 soil types on the campus; soils identified in the immediate project vicinity include Pinto loam, Pinto sandy loam, and Pinto clay loam (Arkley 1963). A subsequent, less detailed soil survey conducted by the U.S. Soil Conservation Service assigned the soils at the main Ranch View Terrace project site to the Elkhorn sandy loam and those at the LPG site as Tierra-Watsonville complex (U.S. Soil Conservation Service 1980) (Figure 3-1). Although the two surveys use different nomenclature, the soil characteristics they describe are very similar; the differences in nomenclature may reflect local variations in the soils studied, differences in field conditions at the time of the surveys, the methodology and approach to the survey, or interpretation of the data (Jones & Stokes 2004); this EA follows the soils nomenclature used in the U.S. Soil Conservation Service's soil survey (U.S. Soil Conservation Service 1980). Soils at Inclusion Area A have been assigned mostly to Watsonville loam and Elkhorn sandy loam.

The Tierra-Watsonville complex, Watsonville loam, and Elkhorn sandy loam are all very deep soils formed in sedimentary deposits. They range from somewhat poorly drained to well drained and are very slowly to slowly permeable. Runoff rates and erosion hazard are highly variable, depending in part on local slope steepness. Risk of corrosion is moderate to high for uncoated steel and ranges from low to high for concrete (U.S. Soil Conservation Service 1980).

Mineral Resources

The UCSC campus, including the proposed project site, is located in an area designated by the State of California as MRZ-3 for subsurface limestone and/or

marble resources (University of California, Santa Cruz 1999).[14] However, carbonate resources are believed to be absent from Inclusion Area D (Pacific Crest Engineering 2002) and the LPG site. The presence of a large sinkhole in Inclusion Area A suggests that this site is at least partially underlain by carbonate bedrock.

Hydrology

Rainfall on the UCSC campus averages approximately 30 inches per year (Warrick 1982). Additional precipitation is supplied by fog drip that results from condensation of moisture on trees, shrubs, and other plants. Surface runoff is controlled by local differences in permeability and slope and is thus variable across the campus, but totals approximately 8 inches per year in the vicinity of the Ranch View Terrace site (Jones & Stokes 2004).

Little is known about the hydrology of the UCSC campus because much of the area's water flows underground. Most surface streams flow only during storms, with the exception of Cave Gulch and Moore Creek, which continue to flow into the summer months. Surface flows commonly enter sinkholes or other karst features to resurface as springs at lower elevations, where the water table intersects the ground surface. Many of the springs carrying water from the UCSC campus are located in the Westlake area of Santa Cruz, which is directly southeast of the campus and approximately 90 feet lower in elevation.

The Ranch View Terrace project site is drained by the Arroyo Seco and Jordan Gulch watersheds of lower campus (Johnson 1988) (Figure 3-2). Arroyo Seco drains the western portion of the site and eventually discharges into the Pacific Ocean between Swift Street and Natural Bridges State Park in the City of Santa Cruz. The Jordan Gulch watershed drains the eastern portion of Inclusion Area D and empties into Neary Lagoon. There are no surface streams, ponds, or channels in the project site. Surface water drains through the site by sheet flow that follows site topography from north to south.

Inclusion Area A is adjacent to Wilder Creek. The Cave Gulch-Wilder Creek system is an important south-flowing drainage that joins with Peasley Gulch to empty into the Pacific Ocean via Wilder Lagoon.

Two natural features informally described as seeps are located south of the proposed development footprint in Inclusion Area D. Their combined area is approximately 1.3 acres (Morgan 1989). Surface conditions at the seeps are highly variable. Water does not pond in the seep areas, and the soil generally does not remain saturated through the dry summer months; in spring 2002, the seeps appeared to be no different from the surrounding areas in terms of moisture content or vegetation. However, in previous years, saturated soils and other indicators of wetland conditions have been present as late as April and May (Jones & Stokes 2004).

[14] The MRZ-3 designation is used for areas containing mineral resources that cannot be evaluated for significance based on available data.

In order to determine the source of the moisture that supplies the seeps, UCSC installed 7 piezometers and monitored groundwater levels over a period of 6 months in 2002. Results suggest that the northern seep is fed by shallow groundwater. By contrast, the southern seep is believed to be the result of local semi-perched groundwater conditions resulting from the presence of impermeable layers that inhibit downward percolation of precipitation (Nolan, Zinn, and Associates 2002).

Hazardous Materials

Inclusion Areas A and D are primarily undeveloped and are managed by UCSC as open space. In addition, Inclusion Area D has supported organic research/cultivation plots and a recycling compost program, and has acted as a storage and sorting area for rock cleared during construction activities on campus. Because of the site's land use history, it is unlikely that hazardous materials are present on the site. However, because the heavy equipment used to sort rock materials stockpiled on the site is often stored onsite, small amounts of substances such as fuels or lubricants may have been spilled.

The LPG site currently supports a concrete pad surrounded by a chain-link fence and an earthen berm. In the past, the site was used for storage of liquid propane gas. It is currently used for storage of equipment and materials. No known contamination exists at the site, but because of past and current uses, small amounts of substances such as fuels and lubricants may have been spilled on the site.

Biological Environment

This section describes the vegetation and wildlife that occur, or may occur, within the project area. Although the Ranch View Terrace HCP (Jones & Stokes 2004) focuses on the Plan Species, this section provides an overview of the full range of vegetation communities and wildlife found in the study area, including, but not limited to, special-status species[15] and sensitive habitats.[16]

This section focuses on conditions and habitats within Inclusion Area D because this area is proposed for development and would experience the greatest change as a result of project implementation. Conditions at Inclusion Area A and the LPG site would remain largely unchanged after project implementation: Inclusion Area A would be preserved as a result of project implementation and the livestock grazing of the site would continue, while the LPG site is currently developed, retaining none of the natural environment it once supported, and

[15] *Special-status species* refers to plants and animals that are legally protected under the Federal Endangered Species Act, the California Endangered Species Act, or other regulations, and species that are considered sufficiently rare by the scientific community to qualify for such listing.

[16] *Sensitive habitats* refers to habitats that are of concern to local, state, or Federal agencies, or considered worthy of conservation, because of their rarity, their diversity, or their value to special-status species.

would continue in a developed condition after project implementation. Consequently, only a general overview of conditions at Inclusion Area A and the LPG site is presented here.

Information on vegetation and wildlife is drawn from the results of baseline vegetation and wildlife surveys conducted by Jones & Stokes botanists and wildlife biologists in 2002 and 2003 (Jones & Stokes 2003a, b), and from reports prepared for other recent UCSC projects. Additional information about the Plan Species, including their life histories, distribution, habitat associations, and reasons for decline can be found in Chapter 3 and Appendices A and B of the Ranch View Terrace HCP (Jones & Stokes 2004). The conservation strategy for the Plan Species is described in Chapter 5 of the HCP.

Inclusion Area D

Vegetation in Inclusion Area D

Most of Inclusion Area D consists of annual grassland habitat. Grasslands in Inclusion Area D are generally dominated by nonnative annual grasses, including wild oats (*Avena barbata*), brome grasses (*Bromus* spp.), and rattlesnake grass (*Briza maxima*). Several areas have a high cover of purple needlegrass (*Nassella pulchra*) and California oatgrass (*Danthonia californica*), both of which are native perennial grasses.

A small stand of coyote brush (*Baccharis pilularis*) scrub is present west of the Equipment Barn. This is an open scrub habitat dominated by coyote brush. Other shrubs in this habitat include blue blossom (*Ceanothus thyrsiflorus*) and poison-oak (*Toxicodendron diversilobum*).

The remaining portion of Inclusion Area D supports a row of established cedar (*Cedrus* spp.) trees along the entrance road from the north end of the area; approximately 4.3 acres of cultivated ground planted in row crops; and a composting area.

No sensitive habitats or special-status plant species are known to be present in Inclusion Area D (Jones & Stokes 2003a). However, seven UCSC special-interest plant species occur in Inclusion Area D. These include three native perennial grasses: purple needlegrass, foothill needlegrass (*Nassella lepida*), and California oatgrass. In addition, quillwort (*Isoetes nuttallii*), keeled club-rush (*Isolepis carinata*), smooth owl's-clover (*Triphysaria versicolor* ssp. *versicolor*), and white hyacinth (*Triteleia hyacinthina*) have been reported in the seep areas along the west side of the grassland (Buck 1986). During the 2002 surveys, white hyacinth was observed in the south seep area and keeled club-rush in the north seep area. Neither quillwort nor smooth owl's-clover was observed in 2002.

Wildlife in Inclusion Area D

Common Wildlife Species

Annual grasslands in Inclusion Area D provide foraging habitat and cover for many common wildlife species. However, where introduced grasses are present in the study area, they are very dense, which can reduce the value of grassland habitat for some species.

Wildlife species observed during site surveys include Western Meadowlark (*Sturnella neglecta*), Red-Tailed Hawk (*Buteo jamaicensis*), Common Raven (*Corvus corax*), California ground squirrel (*Spermophilus beecheyi*), black-tailed hare (*Lepus californicus*), and brush rabbit (*Sylvilagus bachmani*); droppings of mule deer (*Odocoileus hemionus*) were also observed. Northern pocket gopher (*Thomomys talpoides*) is probably also present. Wildlife in grasslands of Inclusion Area A is likely similar to that in Inclusion Area D.

Coyote brush scrub in Inclusion Area D, with its fairly open canopy and low, dense cover, offers a complex mix of niches for many different species. California Towhee (*Pipilo crissalis*), California Quail (*Callipepla californica*), House Finch (*Carpodacus mexicanus*), Western Scrub-Jay (*Aphelocoma insularis*), black-tailed hare, and brush rabbit have been observed in this habitat.

Special-Status Species

A search of the 2002 California Natural Diversity Database (CNDDB) for the U.S. Geological Survey 7.5-minute quadrangles that include the project site (Santa Cruz) and adjacent area (Davenport, Felton, Laurel, and Soquel) indicates that 14 special-status wildlife species have at least moderate potential to occur in or near Inclusion Area D. The following sections describe those that may use the habitats found within Inclusion Area D. Additional detailed information on these and other species is presented in *Biological Baseline Study of Inclusion Area D* (Jones & Stokes 2003a).

California Red-Legged Frog

California red-legged frog (*Rana aurora draytonii*) is federally listed as threatened and is a California species of special concern. This species is found throughout the Coast Ranges from Marin County south to San Diego County, with isolated populations in the Sierra Nevada from Butte County to Fresno County. Habitat suitable to support this species is characterized by permanent and ephemeral streams or ponds with emergent and submergent vegetation and riparian vegetation along the banks. During the dry summer and fall months, adult frogs aestivate in rodent burrows in upland habitats (Jennings and Hayes 1994).

Breeding Habitat in Inclusion Area D

There are no aquatic features in Inclusion Area D; therefore, no breeding habitat for CRLF is present. The closest known breeding habitat is at the Arboretum Pond, approximately 1,700 feet northeast of Inclusion Area D (Figure 3-3).

Aestivation and Dispersal Habitat in Inclusion Area D

California red-legged frogs may use Inclusion Area D for aestivation and/or dispersal, but such usage has not been verified. Because site conditions do not support quality aestivation and/or dispersal habitat, as described below, CRLF use of this site is expected to be minimal, if they use it at all. As described in *Hydrology and Water Quality* above, two intermittently wet areas informally referred to as seeps occur in the middle of the site. In 2002, the soil moisture and vegetation at these sites did not differ from the surrounding area. The wetter conditions observed at these sites in previous years would likely provide better upland habitat for CRLF, but at no time would these sites provide suitable breeding habitat.

Small mammal burrows—probably created by Botta's pocket gopher (*Thomomys bottae*)—are present in low to moderate density on the grasslands in Inclusion Area D and offer marginal upland aestivation habitat for CRLF. However, the thick growth of nonnative grasses, the lack of aquatic features, and the presence of aestivation habitat of better quality near the Arboretum Pond decrease the likelihood that CRLF would aestivate in Inclusion Area D. In addition, movement in search of aestivation sites generally occurs towards the end of the summer when aquatic sites dry. It is unlikely that CRLF would move large distances through dense, dry vegetation to seek aestivation sites.

The cultivated area in the northern portion of Inclusion Area D is planted in row crops and is irrigated through the dry summer months. It is not known whether the irrigation attracts CRLF, although it does provide some moisture during the summer, and farm activities do not present a barrier or serious hazard to frogs, in part because of the organic farming practices currently in use. However, there is no suitable aquatic habitat east of this area. There have been no verified sightings of CRLF on the Farm.

Because suitable breeding habitat is present in the Arboretum Pond and CRLF have been observed in lower Moore Creek (less than 0.5 mile from Inclusion Area D), CRLF may move through upland grassland areas in the project vicinity during the rainy season. They could disperse west and southwest of Arboretum Pond and Moore Creek toward Wilder Creek and Cave Gulch, where additional suitable habitat occurs. However, suitable aquatic habitat is not likely to be present east of the Arboretum Pond and Moore Creek watershed; moreover, development to the east and southeast of Inclusion Area D may create a barrier to CRLF dispersal.

Golden Eagle

The Golden Eagle (*Aquila chrysaetos*) is federally protected under the Bald and Golden Eagle Protection Act. It is a California species of special concern and is

a fully protected species under Section 3511 of the California Fish and Game Code. This species occurs in small numbers throughout most of California, primarily occupying mountain and desert habitats. Approximately 500 breeding pairs are estimated to nest in California. Golden Eagles construct their nests on cliff ledges and high rocky outcrops or in large trees. Grassland, oak savanna, and open woodland and chaparral habitats provide suitable foraging habitat.

Golden Eagles are known to forage in the grassland habitat east of Hagar Drive (the Great Meadow), approximately 1 mile from Inclusion Area D. There are no recent records of Golden Eagles nesting on the campus. Potentially suitable nesting habitat is present on Lower Campus in the eucalyptus grove adjacent to Inclusion Area D, but this area is frequently disturbed by human presence, and the Golden Eagles are unlikely to nest there. Foraging habitat within Inclusion Area D is considered to be of low to moderate quality because of its small size (a total of 25.5 acres); its location near areas frequented by humans (the Farm, the Arboretum, and the campus entrance); and the high density of grassland vegetation, which can impede soaring eagles' detection of prey.

Northern Harrier

Northern Harrier (*Circus cyaneus*) is a California species of special concern. This species ranges from annual grasslands in the Central Valley to lodgepole pine forests and alpine meadows at elevations as high as 9,800 feet above mean sea level. Northern Harriers are permanent residents in the northeastern plateau, coastal areas, and Central Valley and are widespread winter residents throughout the rest of California, except for the higher elevations. Northern Harriers nest on the ground in shrubby vegetation; nesting usually takes place near marsh habitat, in emergent wetlands, or along rivers or lakes, but they may also nest in grasslands, grainfields, or sagebrush flats several miles from water (Zeiner et al. 1990).

A single Northern Harrier individual was observed foraging in Inclusion Area D during the 2002 surveys (Jones & Stokes 2003a). Potential nesting habitat is present in grassland and coyote brush scrub habitat in Inclusion Area D; however, the relatively high level of human disturbance in Inclusion Area D probably discourages nesting on the site.

White-Tailed Kite

White-Tailed Kite (*Elanus leucurus*) is a fully protected species under Section 3511 of the California Fish and Game Code. This species is a permanent resident in lowland areas west of the Sierra Nevada from the Sacramento Valley south to San Diego County, including coastal valleys and foothills. White-Tailed Kites are rarely found away from agricultural areas. Nests are constructed in dense stands of oaks (*Quercus* spp.), willows (*Salix* spp.), or other trees located near open foraging areas. The species has extended its range and become more abundant in recent decades (Zeiner et al. 1990).

Suitable foraging habitat for White-Tailed Kites is present in the grassland and coyote brush scrub habitat of Inclusion Area D. Although no White-Tailed Kites were observed in Inclusion Area D during the 2002 surveys, a single adult was

seen nearby, foraging over the grassland area north of the Arboretum, approximately 1,200 feet from Inclusion Area D. This observation was made after the close of the nesting season. In 2000, a communal White-Tailed Kite roost was identified in the North Campus area's Seep Zone Natural Reserve, approximately 1.5 miles from Inclusion Area D, and a pair of White-Tailed Kites was believed to be nesting in the North Campus Environmental Reserve area, also approximately 1.5 miles north of Inclusion Area D (Ecosystems West 2002).

Western Burrowing Owl

Western Burrowing Owl (*Athene cunicularia hypugaea*) is a Federal species of concern and a California species of special concern. Western Burrowing Owls occur in lowlands throughout California, including the Central Valley, coastal areas, northeastern plateau, and southern deserts. This species is known to nest in ground squirrel burrows in grasslands, deserts, and agricultural areas (Zeiner et. al. 1990). Pipes, culverts, concrete piles, and other artificial structures are also used for nesting.

Western Burrowing Owls are known to winter roost and nest on the UCSC campus (California Natural Diversity Database 2002). The CNDDB (2002) records observations of two adult and two juvenile Burrowing Owls on the UCSC campus in 1987, and another observation of a single winter roosting bird between Wilder Creek and Empire Grade in 1994. Suitable habitat for Western Burrowing Owls is also present east of Hagar Drive. The larger blocks of grassland habitat north of the Arboretum offer some value for Burrowing Owls, but are considered marginal habitat because of the generally dense vegetation and lack of open areas. The disturbed condition of the grasslands in Inclusion Area D, the lack of ground squirrel burrows, and the presence of tall, dense grasses also make it unlikely that Western Burrowing Owls would nest in this area.

Ohlone Tiger Beetle

The OTB (*Cicindela ohlone*) is federally listed as endangered (U.S. Fish and Wildlife Service 2001b) and also meets the requirements to qualify as a "rare, threatened, or endangered species" under CEQA. This species has one of the most restricted ranges of the 110 species of tiger beetles described in North America (Boyd & Associates 2002): it has been reported at only 15 locations in central and western Santa Cruz County (Figure 3-4), and appears to be restricted to coastal terrace settings elevations less than 1,200 feet above mean sea level, located between the crest of the Santa Cruz Mountains and the Pacific Ocean.

Ohlone tiger beetle inhabits areas characterized by remnant stands of native grassland, in particular coastal terrace prairie; California oatgrass and purple needlegrass co-occur with OTB at all of the known sites. Within the grasslands, the beetle has been observed primarily on level ground and less frequently on slopes, where the vegetation is sparse or bare ground is prevalent. The substrate at each known beetle location consists of shallow, poorly drained clay or sandy clay soils that have accumulated over a layer of Santa Cruz Mudstone bedrock (Freitag et al. 1993). As previously mapped by the U.S. Soil Conservation Service (1980), the soils at all known OTB sites belong to the Tierra-Watsonville complex (U.S. Soil Conservation Service 1980), but more recent soil mapping

indicates that other similar soils occur at many of the locations known to support the beetle (Natural Resources Conservation Service 2002).

No OTB adults or burrows have been found on Inclusion Area D (Entomological Consulting Services 2002). The closest known campus population occurs in Inclusion Area A, approximately 0.6 mile west of Inclusion Area D. The other known campus location is on Marshall Field, more than 3 miles to the north.

The soils in the southern portion of Inclusion Area D (south of the proposed development area) have been mapped as Tierra-Watsonville complex (U.S. Soil Conservation Service 1980, Natural Resources Conservation Service 2002), which suggests it may be suitable for OTB. However, current vegetation conditions—specifically, the presence of tall, dense, nonnative vegetation and a deep cover of thatch—render almost all of the site unsuitable for use by beetles.

The only part of Inclusion Area D that currently provides suitable habitat for OTB is a maintenance road along the eastern edge of Inclusion Area D. Vegetation along the road is mowed to permit occasional access by maintenance vehicles. This road provides approximately 0.2 acre of sunlit bare or sparsely vegetated patches that could provide habitat for OTB. However, no beetles or burrows have been found in this area in recent surveys (Entomological Consulting Services 2002).

Monarch Butterfly

Although the monarch butterfly (*Danaus plexippus*) is not listed under the Federal or state Endangered Species Act, the species and its habitat on the UCSC campus are protected by a variety of regulations, including CEQA, the California Fish and Game Code, and regulations in the general plan and zoning ordinances of the County of Santa Cruz.

Monarch butterflies overwinter in protected groves of trees along the coast of California, including the Santa Cruz area, between October and March. They have been observed in the Arboretum eucalyptus grove (California Natural Diversity Database 2002), but do not regularly overwinter there. Researchers have noted that monarchs are generally observed in the Arboretum grove during years when large numbers of the species are overwintering in the Santa Cruz area; they infer that the Arboretum grove is typically used when other preferred sites are at or near capacity (Arnold pers. comm.). In recent years, the numbers of overwintering butterflies in the Santa Cruz area have substantially decreased, and monarchs have not been observed on campus.

Bats

Bats forage in a variety of habitats, including grassland and coyote brush scrub. Special-status bat species that may forage in Inclusion Area D include Townsend's big-eared bat (Corynorhinus townsendii townsendii), long-eared myotis (Myotis evotis), fringed myotis (M. thysanodes), long-legged myotis (M. volans), Yuma myotis (M. yumanensis), pallid bat (Antrozous pallidus), and western red bat (Lasiurus blossevillii). All of these are considered species of concern by the California Department of Fish and Game, are protected by the

Service as migratory species, or are considered high priority by the Western Bat Working Group.

Bat foraging habitat in Inclusion Area D is not of particularly high quality, but during years when the seeps in Inclusion Area D remain wet, they may support populations of insects that provide a food source for bats. The grassland and coyote brush scrub habitats in Inclusion Area D do not provide roosting habitat for bats. However, suitable roosting habitat is present in nearby historic buildings (e.g., the storage barn) and, to a lesser extent, in the Arboretum eucalyptus grove. Acoustic bat surveys conducted in 2000 detected the following bat species in Inclusion Area D: long-eared myotis, long-legged myotis, Yuma myotis, California myotis (*Myotis californicus*), western red bat, hoary bat (*Lasiurus cinereus*), and Mexican free-tailed bat (*Tadarida brasiliensis*) (Ecosystems West 2001). Mexican free-tailed bats were detected during the 2002 surveys of Inclusion Area D (Jones & Stokes 2003b). High quality bat roosting and foraging habitat occurs on campus immediately north and west of the Campus Core, approximately 1.5 miles from Inclusion Area D (Ecosystems West 2002).

Migratory Birds

Migratory birds may utilize the eucalyptus grove adjacent to the proposed development area and the LPG site. All migratory birds and their nests are federally protected under the Federal Migratory Bird Treaty Act (16 U.S.C. 703-712) that prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests.

LPG Site

The LPG site on which the equipment storage facility would be constructed is paved and fenced and is currently being used for storage of equipment and various construction materials. No natural habitats remain on this site, and wildlife use of this site is extremely limited because of high levels of disturbance and human activity.

California red-legged frogs are unlikely to use the LPG site, although frogs dispersing from the Arboretum Pond 1,800 feet away may seek temporary refuge under the debris piles on the site. The site is adjacent to a small temporary pond that may also be used by dispersing frogs (Jones & Stokes 2002).

Ohlone tiger beetles are not known or expected to occur on the LPG site, because no suitable habitat is present. Grading and hardscaping at the site has disturbed the soils, and the surrounding eucalyptus trees shade portions of the remaining bare ground, rendering it unsuitable for beetles.

Inclusion Area A

Vegetation

Inclusion Area A is dominated by grassland habitat. A fringe of mixed evergreen forest bounds the western perimeter of the site. Grassland habitat in Inclusion Area A is similar to that in Inclusion Area D, but has a lower density, vegetation height, and lower density of exotic species than on Inclusion Area D because of livestock grazing.

The southern half of Inclusion Area A supports Mima mound and swale topography that may be classified as coastal terrace prairie habitat, and is characterized by native perennial grasses. California oatgrass is particularly prominent, and although nonnative annual grasses are still present, they are less abundant in the Mima mound and swale areas than in drier portions of Inclusion Areas A and D. Coastal prairie areas are much more mesic than other grasslands on campus, and support a diverse assemblage of native perennials, including coyote thistle (*Eryngium armatum*), white hyacinth, dwarf brodiaea (*Brodiaea terrestris*), Kellogg's yampah (*Perideridia kelloggii*), coast trefoil (*Lotus formosissimus*), and Olney's sedge (*Carex gynodynama*) (Jones & Stokes 2003b).

Cattle grazing maintains relatively short vegetation (up to approximately 8-10 inches tall after grazing). Vegetation cover across the site ranges from 80-100 percent, primarily by grasses; herb cover is less than 20 percent, and often less than 5 percent. Livestock grazing maintains standing dry matter (i.e., thatch) at very low levels (less than 10 percent cover). In other parts of Santa Cruz and Monterey Counties, shrubs such as coyote brush (*Baccharis pilularis*) can invade grasslands and convert them to coastal scrub. There are several individuals of coyote brush in Inclusion Area A that are heavily browsed and stunted, suggesting that cattle also prevent scrub invasion of the grassland.

Mixed evergreen forest along the western perimeter of Inclusion Area A is dominated by coast live oak (*Quercus agrifolia*), interior live oak (*Q. wislizenii*), California bay laurel (*Umbellularia californica*), madrone (*Arbutus menziesii*), and Douglas-fir (*Pseudotsuga menziesii*). The understory is commonly dense, with small trees, California hazelnut (*Corylus cornuta*), poison-oak, and shrubs more typical of the chaparral stands.

No special-status plants have been found in Inclusion Area A (Jones & Stokes 2003b).

Wildlife

Wildlife species found in Inclusion Area A are similar to those found in Inclusion Area D. Because the land use of the site will not change as a result of the proposed action, only the HCP Plan Species are discussed in detail below.

California Red-Legged Frog

California red-legged frogs have not been observed in Inclusion Area A but that is likely due to a lack of surveys in that area. The area of mixed evergreen forest in Inclusion Area A borders Wilder Creek, where CRLF are known to occur. Evergreen forest habitat on slopes adjacent to Wilder Creek provides shade and a cool, moist corridor hospitable to dispersing frogs. The adjacent grassland habitat in Inclusion Area A may provide a dispersal corridor between the frog populations in the Wilder Creek/Cave Gulch watershed and the Moore Creek watershed on campus; Inclusion Area A is located between them.

Areas of Mima mound and swale topography provide high quality upland habitat for CRLF aestivation and dispersal. The swales between the Mima mounds remain wet for extended periods during the winter and spring, providing moist resting habitat for dispersing frogs. Small temporary ponds (approximately 25-40 square feet in size) also form along the swales, providing resting and foraging places for frogs (these ponds, however, are too small and too temporary to provide suitable breeding habitat). The wet areas facilitate the success of native plant species, increasing the potential habitat value for CRLF.

The vegetation on Inclusion Area A, as currently managed, facilitates dispersal by CRLF across the site by providing cover (i.e., protection from predators) and resting areas, while also allowing unhindered movement.

Ohlone Tiger Beetle

Ohlone tiger beetle occupies approximately 0.2 acre of Inclusion Area A (and the Campus Resource Land within it) in three distinct areas: along the north/south trail in grassland at the edge of the mixed evergreen forest, along the southern boundary fence, and along a small trail that leads northwest from the entrance gate along Empire Grade. Approximately 0.1 acre of the 0.2 acres of occupied habitat within Inclusion Area A and Campus Resource land lies within the Inclusion Area A Preserve. The population of OTB in Inclusion Area A is thought to form the northern edge of a previously observed larger, denser population on the adjacent privately owned ranch. Approximately 0.1 acre of suitable but unoccupied habitat occurs along the east-west access road and trail that traverses the site.

Much of the soil on the lower portion of the Inclusion Area A Preserve is classified as Tierra-Watsonville complex, which is known to support OTB (Soil Conservation Service 1980; U.S. Fish and Wildlife Service 2001). The topography of the area is dominated by Mima mounds and swales. Grasslands away from the roads and trails are not considered suitable habitat for the species. The lower elevation, wetter areas formed from the Mima mound topography are too wet to support OTB. The role of moisture in the life history of the species, however, is still unknown. Cattle grazing or other types of vegetation management are thought to be critical to maintaining suitable habitat for OTB in the proposed Inclusion Area A Preserve. Grazing decreases the height and density of vegetation and thatch, and with proper timing and intensity, increases

the proportion of native grass species (D. Raven pers. comm.). This in turn increases the amount of bare or sparsely vegetated portions of the grassland where adult beetles are most commonly observed. Sparsely-vegetated and bare areas maintained by grazing and trail use are thought to be essential for successful foraging and breeding by OTB.

Social Environment

Cultural Resources

Efforts to identify cultural resources within the project area consisted of

- conducting a records search,
- conducting archival research,
- contacting potentially interested parties, and
- conducting a pedestrian field survey.

All work was conducted by Jones & Stokes staff members meeting the Secretary of the Interior's mandates under the National Historic Preservation Act. The following sections describe the methods employed and the results of each phase of the process.

Records Search and Archival Research

A records search was conducted at the Northwest Information Center of the California Historical Resources Information System at Sonoma State University on October 22, 2002. The records search entailed consulting the state's database of previous studies and known cultural resources sites and pertinent historical inventories and historic maps.

The records search revealed that the project area had been surveyed in 1978 (Archaeological Associates of Central California et al. 1978), and that no known cultural resources sites are located within the project area. However, six cultural resources sites are located within a 0.5-mile radius of the project area, two of which are prehistoric lithic scatters. The historic-period cultural resources include a dugout and possible well; an agricultural field; the central buildings of the Cowell Ranch operation; and another ranching-related site.

Contacts with Potentially Interested Parties

On November 21, 2002, Jones & Stokes contacted the Native American Heritage Commission (NAHC) and requested that they conduct a search of their sacred lands file and provide a list of potentially interested Native American representatives for the project area. On December 23, 2002, the NAHC responded, stating that the search of the sacred lands database showed no known

Native American cultural resources in the project area. The NAHC nonetheless provided a list of 12 Native American representatives. Contact letters that included an illustration of the project area, described the project, and requested comments and concerns were sent to all 12 Native American representatives. As of July 2004, no responses had been received.

Jones & Stokes has also initiated consultation with potentially interested historical organizations, including the Museum of Art and History in Santa Cruz and the City of Santa Cruz Historic Preservation Commission.

Archaeological Field Survey

On January 24, 2003, a Jones & Stokes archaeologist surveyed the project area on foot. Most of the project area was surveyed using zigzag transects spaced 5–15 meters apart to attain maximum survey coverage. Cultivated portions of the project area were given cursory survey coverage. Visibility of the surface ranged from 5 percent to 20 percent. Rodent holes and associated back-dirt, as well as other areas with high visibility, were inspected closely for indications of cultural materials. No archaeological resources were located during this survey.

Architectural Inventory

On February 18, 2003, a Jones & Stokes architectural historian conducted a site visit to confirm that no architectural resources exist within the project area and to assess the potential effects of the project on the adjacent Cowell Ranch Historic District, which is eligible for listing in the National Register of Historic Places (NRHP).

Overview of Cowell Ranch Historic District

The Cowell Ranch Historic District is a collection of 19th-century vernacular industrial, agricultural, and residential buildings and structures that derives its significance from its role as an early California lime manufacturing plant. The Cowell Ranch is associated with Henry Cowell, an important entrepreneur in Santa Cruz and the greater San Francisco Bay Area. The Cowell Company was a leader in the production of lime for the northern California building trades in the latter half of the 19th century, and in the development of the northern California cement industry in the early 20th century.

The period of significance for the Cowell Ranch Historic District is 1853–1906. This span represents the period from construction of the first buildings at the site to support the operation of the lime kilns up to the time the Cowell family moved their lime production operation to a new site at Rubicon. The district is eligible under NRHP Criterion A, because of the role the site played in the development of the lime industry in Santa Cruz County. It is also eligible under Criterion C, as a fine collection of 19th-century vernacular buildings.

The Cowell Ranch Historic District contains 16 building and 2 structures that were constructed during the period of significance and retain sufficient integrity to contribute to the significance of the district. Following are the contributing buildings and structures.

- Horse Barn (theater).
- Cookhouse (Admissions Office) and pig feeder.
- Hay barn (maintenance barn) and associated water trough and loading pens.
- Blacksmith shop (classroom).
- Carriage house (Public Information Office).
- Jordan/Cowell residence (Cardiff House Women's Center) and associated outbuilding and planter.
- Paymaster's house/Stone house.
- Worker's cabin west of the lime kilns.
- Five workers' cabins east of Coolidge Road.
- Cooper's shop.
- Henry Cowell lime kilns.
- Pond and water outlet.
- Powder house.
- Jordan/Cowell entry gate and picket fence.

The Cowell Ranch property was originally identified as an historic district in a cultural landscape report (CLR) prepared for UCSC in 1992 (Paul Rodrigues Landscape Architecture et al. 1992). The boundaries of the district were subsequently refined in a report by JRP Historical Consulting Services (1997), which included peer review of the CLR and the draft historic properties survey report (HPSR) prepared for proposed improvements to the Coolidge Road-Campus Facilities Access Road intersection. The findings of JRP's 1997 study were incorporated into the final HPSR (Aldecoa 1997).

Generally, the district boundaries enclose 31 acres and follow the natural contours of the hillside and small valley to include all 18 contributing architectural resources and all archaeological resources. Although UCSC is currently conducting a new evaluation of the district and its boundaries, the results of which are not known at this time, this EA assumes that recognized historic district boundaries are adequate and valid.

Integrity of Cowell Ranch Historic District

According to National Register Bulletin 15 (*How to Apply the National Register Criteria for Evaluation*), a district consists of a "concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development" (U.S. Department of the Interior, National Park Service 1991). The Cowell Ranch Historic District gains its

significance through its association with lime production in the 19th century, its association with local entrepreneur Henry Cowell, and the vernacular architecture of the contributing elements. Therefore, the contributing building and structures in the Cowell Ranch Historic District are linked by their historical development and not by an aesthetic plan.

The documentation in which the historic district is identified and defined (JRP Historical Consulting Services 1997, Aldecoa 1997) concludes that the historic district retains only a moderate degree of integrity to its period of significance. A district with high integrity would generally include an intact cultural landscape consisting of relatively unmodified buildings and structures within the original spatial organization of the landscape, together with original circulation networks (roads, trails, railroads), historic vegetation, fences, walls, trees, and gardens. Because nearly all of the contributing buildings and structures have been altered or lost character-defining features, the Cowell Ranch Historic District has retained only a modest level of integrity. In addition, the development of Coolidge Road, new adjacent buildings, parking lots, bike paths, and the existing gravel access road to Inclusion Area D have replaced the historic circulation network and landscape features. The original Cowell Ranch was also several thousand acres in size, while the refined boundary of the 31-acre historic district was established to enclose only the most unaltered buildings, which once formed the industrial and residential core of the ranch. Therefore, the most important features of the Cowell Ranch Historic District are the buildings and structures; the space and environment within and surrounding the structures have been greatly altered.

Land Use and Planning

Existing Land Uses at Ranch View Terrace Site

Figure 1-2 shows the location of the proposed Ranch View Terrace site within Inclusion Area D. All of the area proposed for development is located within Santa Cruz city limits. It is designated "UCSC" in the City's general plan (City of Santa Cruz 1992, as amended) and is zoned P-F (public facilities). Land uses consistent with the P-F designation include state government facilities and public schools. The proposed development site is outside the Coastal Zone.

Figure 3-5 shows LRDP land use designations at the project site and in surrounding areas. The LRDP designates the campus' five inclusion areas (A–E) for support of "…University-affiliated, non-academic facilities advantageous to the functioning of the campus community," with priority consideration given to providing housing for faculty and staff, graduate students, students with families, and single students. Additional uses under consideration include provision of childcare facilities. All five of the inclusion areas were defined in part—and identified for potential future housing use—because they are easily accessible from major off-campus roads.

The northernmost portion of the proposed Ranch View Terrace site is currently used as a temporary research plot by the Farm. This area is planted in row crops

and is irrigated using overhead and drip irrigation. It is currently separated from the rest of Inclusion Area D by a tall wire fence.

Immediately south of the cultivated portion of the site, a portion of Inclusion Area D is used to store rock materials removed during construction activities throughout campus. The rock is stored in a number of large piles, and is in the process of being separated according to size, using heavy equipment. The heavy equipment used to conduct this work is often stored on the site. Soils and vegetation in and around the rock storage area are highly disturbed.

The northwest portion of the proposed Ranch View Terrace site is covered with gravel and stockpiles of organic compost materials. UCSC operations staff have created windrows of organic waste as part of a campus recycling program, and tend them on a weekly schedule. The completed compost product is loaded and trucked to landscaped areas throughout campus.

An existing fire road runs through the middle of the proposed development site, and requires periodic grading. The fire road is located within open grassland, and runs from the nearby historic core area, between the Farm and Arboretum, to connect with the lower campus fire road network. This fire road will be replaced by the loop road within the new development and the two access roads to the site, including a new emergency access road.

The remaining areas within the proposed Ranch View Terrace site support grasslands and scrub habitat, and are managed as open space.

Land Use at the Inclusion Area D Preserve

Figure 2-3 shows the portion of Inclusion Area D proposed for preservation.

The northern portion of the proposed reserve (approximately 5–9 acres) supports patches of coastal terrace prairie habitat (Jones & Stokes 2003a). This area originally supported a small population of native bunchgrasses, which was enhanced as part of a mitigation plan for the UCSC Music Center in 1997. Over a 3-year period, various management activities occurred within this coastal terrace prairie mitigation area that included clearing thatch and nonnative vegetation through the use of experimental manual techniques to enhance the native vegetation (ABA Consultants and Joni L. Janecki & Associates 1992). The site is no longer actively managed.

The remaining area within the proposed reserve supports grassland and scrub habitat, and is managed as open space.

Land Use at the LPG Site

The LPG site is in an area designated for site-specific research in the current LRDP. This designation is intended for uses that support research associated with the social and natural sciences, and for student services uses. The LPG site is largely hardscaped, with the existing concrete pad surrounded by a chain-link

fence and an earthen berm. The site was previously used for the storage of liquid propane gas, but is now used by UCSC maintenance staff for equipment storage and for temporary stockpiling of debris and landscaping material. Several small temporary structures are also present on the site.

Land Use in Inclusion Area A Preserve

Inclusion Area A is located west of Empire Grade Road, and is in the jurisdiction of the County of Santa Cruz. In addition, this area is located within the California Coastal Zone. Land uses on the Inclusion Area A Preserve are subject to the regulations of the California Coastal Act of 1976. The California Coastal Act provides policies for coastal management to protect the environment, ensure orderly utilization and conservation of resources, maximize public access, and ensure priority for coastal-dependent development. In 1994, Santa Cruz County adopted a combined general plan/local coastal program document to guide planning within the County.[17]

The Inclusion Area A Preserve is located within the County's Bonny Doon Planning Area. The County General Plan land use designation for this area is "Public Facilities." The areas designated "Public Facilities" in the County General Plan/LCP are subject to development restrictions. The objective of the public facilities designation is to achieve patterns of development compatible with the availability of required public facilities and services.

The majority of Inclusion Area A is designated by the LRDP for support of "…University-affiliated, non-academic facilities advantageous to the functioning of the campus community," with priority consideration given to providing housing for faculty and staff, graduate students, students with families, and single students. An easement for construction of a public school in conjunction with additional campus housing has also been considered for Inclusion Area A. The remainder of the area proposed to create the Inclusion Area A Preserve is currently designated as campus resource land. This designation is used for campus lands intended to remain in their natural state; the current LRDP prohibits large-scale development such as academic facilities, colleges, housing, and parking lots, although smaller projects, such as water storage tanks or access roads may be approved.

Currently, Inclusion Area A is managed as open space, and is used for grazing.

Adjacent Land Uses

Lands adjacent lands to Inclusion Area D and the LPG site are designated in the LRDP as campus and community support (historic core) to the east, protected landscape to the northeast, and site-specific research to the north and west (Figure 3-5).

[17] Santa Cruz County. 1994. Santa Cruz County General Plan and Local Coastal Plan.

Lands designated for campus and community support are intended for a variety of public services and campus support facilities. Adjacent to the Inclusion Area D project site, campus and community support lands encompass a historic core area that includes a historic district eligible for listing in the NRHP (see *Cultural Resources* section above). Several of the buildings in the historic district have been refurbished to house UCSC support functions such as parking services and administration. However, although UCSC is making limited use of buildings in the historic district, its intent is to preserve and maintain the character of this cultural resource to the greatest extent feasible (Jones & Stokes 2004).

The protected landscape designation northeast of the project area includes lands designated to maintain special campus landscape features for their scenic value, for biological interest, and as wildlife corridors. The protected landscape area adjacent to the project area consists primarily of undeveloped rolling grasslands with minor roadway and utility improvements (Jones & Stokes 2004).

Adjacent lands with the site-specific research designation include the Farm and the Arboretum. The Farm supports row crops, orchards managed via intensive farming methods, greenhouses, classrooms, and farm-related storage. Farm lands immediately adjacent to Inclusion Area D include fields farmed in row crops. The Arboretum area supports demonstration gardens as well as a variety of greenhouse and horticulture buildings. Adjacent to Inclusion Area D, the lands are sparsely planted and less maintained than in other parts of the Arboretum. A large eucalyptus grove bounds Inclusion Area D on the southwest (Jones & Stokes 2004).

Inclusion Area A is bounded by open space along the Wilder Creek drainage to the west, and by the campus Environmental Reserve and Arboretum across Empire Grade to the east. Much of its southern boundary is also adjacent to open space, although the southwest corner of Inclusion Area A abuts residential development within the City of Santa Cruz (Jones & Stokes 2004).

Noise

Ambient noise levels within and adjacent to the Ranch View Terrace site are generally low. The primary source of noise is traffic on nearby roadways (Coolidge Drive, High Street, and Empire Grade). Periodic farming, rock sorting, and maintenance activities taking place on and adjacent to the site contribute equipment-related noise.

No sensitive receptors are located within the project area. Sensitive receptors adjacent to the project area include UCSC faculty, staff, and students; visitors to the Arboretum and campus recreation facilities; and residents of the UCSC campus and communities located in the immediate vicinity of UCSC.

Population Growth and Housing

Population

The most recent data from the California Department of Finance (2002) indicate that as of January 2002, the population of the City of Santa Cruz was estimated to be 55,085, and the population of the County of Santa Cruz was estimated to be 260,194. These figures are lower than the values projected in the LRDP EIR for population in 1999 (61,468 and 278,435 for the City and County respectively), because growth has occurred more slowly than anticipated (University of California, Santa Cruz 1988). The figures are also lower than 1999 values projected by the City of Santa Cruz General Plan (56,620 and 264,200 for the City and County respectively) (City of Santa Cruz 1992, as amended).

The most recent data show an undergraduate enrollment of 12,845 and a graduate enrollment of 1,277 during fall 2002 matriculation (University of California, Santa Cruz 2003a). Faculty and professional staff were estimated at 3,546 for 2001–2002. Both enrollments and employment levels are in excess of those projected in the LRDP EIR (University of California, Santa Cruz 1988).

Enrollment is expected to grow to 15,000 by 2005 in order to meet campuswide enrollment goals set by the LRDP. This is expected to necessitate growth in faculty and staff employment as well.

Housing

UCSC currently provides 130 on-campus housing units for faculty and staff (Houncer pers. comm.). Vacancy rates for on-campus faculty/staff housing are almost nil, because both for-sale and rental units are offered at below-market rates, making them extremely appealing in the current housing market. By contrast, the most recent data indicate a 2002 vacancy rate of 4.94 percent for the City of Santa Cruz and 7.8 percent for the County of Santa Cruz (California Department of Finance 2002).

Public Health Hazards

No public health hazards have been identified on the Ranch View Terrace project site, in Inclusion Area A, or at the LPG site.

Public Services and Utilities

Police and Fire Protection

The UCSC Police Department (UCSCPD) is the sole provider of police protection services on campus. The UCSCPD supplements these services only when specific calls are made to other law enforcement agencies in the City and

County of Santa Cruz to request additional support. The UCSCPD currently has 18 sworn officers and 23 assisting staff members in the department (Macy pers. comm.). Staffing levels at the UCSCPD are governed by the LRDP EIR Mitigation Monitoring Program (MMP), with the goal of ensuring that proposed development does not adversely affect the UCSCPD's ability to provide service to the campus. The MMP uses criteria based on the ratio of sworn officers to UCSC faculty, staff, and students and on the number of serious crimes occurring annually on the campus to establish necessary staffing levels. The campus is committed to continuing to hire as needed to maintain the level of police protection stipulated in the MMP (University of California, Santa Cruz 1999).

The UCSC Fire Department provides first response for all fire emergencies on UCSC property. However, the City of Santa Cruz Fire Department is also responsible for providing fire suppression services to the campus at a level of service equal to what it provides to the City at large (University of California, Santa Cruz 1999). In addition, the California Department of Forestry and Fire Protection responds to fires in all unincorporated portions of Santa Cruz County, including unincorporated areas on the UCSC campus. Staffing levels for the UCSC Fire Department are monitored through the MMP; the UCSC Fire Department currently employs 17 full time staff. In accordance with campus growth, the station will continue to hire staff to support the goal of maintaining a ration of 1 firefighter for every 289 campus residents (University of California, Santa Cruz 2001a). In addition, the City of Santa Cruz Fire Department maintains a total of 12 firefighters on duty at three local stations (City of Santa Cruz 2003).

Schools

The City of Santa Cruz School District is one of nine districts in the Santa Cruz County public school system. Nine City schools serve K–8 students, including Bayview, Branciforte, DeLaveaga, Gault, Monarch, Natural Bridges, and Westlake Schools; Branciforte Junior High School; and Mission Hills Junior High School. Five high schools and continuation schools serve students in grades 9–12: Harbor High School, Santa Cruz High School, Soquel High School, The Ark, and Loma Prieta High School. Current enrollment rates are shown in Table 3-2 below, which also includes data for students pursuing alternative family education (home schooling) (City of Santa Cruz School District 2003).

Table 3-2. Average Enrollment for City of Santa Cruz School District

School Name	Average Enrollment
Secondary Schools—Data for 2002–2003 School Year	
Branciforte Junior High	380
Mission Hills Junior High	441
Santa Cruz High	1,220
Soquel High	1,305
Ark	149
Alternative Family Education (Home)	111
Loma Prieta High	127
Elementary Schools—Data for 2001–2002 School Year	
Branciforte	553
Delaveaga	474
Gault	377
Monarch	46
Natural Bridges	387
Westlake	546
Alternative Family Education (Home)	67

Source: City of Santa Cruz School District 2003

Parks and Recreation

Some 2,000 acres of UCSC lands, including meadows and forests, are available to the public for daytime recreational use. Recreational opportunities include walking, jogging, bicycling on both paved and unpaved trails, and nature viewing. The campus also provides 88 acres of physical education and recreational facilities. All campus recreational facilities are available to students, faculty, staff, alumni and associate members of the Alumni Association.[18] Another 705 acres of UCSC land are designated as open space, and are available for use by the general public (University of California, Santa Cruz 1999).

Recreational opportunities in nearby communities within the City and County of Santa Cruz include kayaking, surfing, mountain and road biking, and nature viewing. The area surrounding UCSC offers a total 5,000 acres of County parkland and 900 acres of City parks (University of California, Santa Cruz 1999). Several state parks are also located in the Santa Cruz area, including Natural Bridges, Wilder Ranch, Cowells, and Seabright.

Utilities

Water Supply

The City of Santa Cruz Water District (SCWD) is the primary water supplier to UCSC. As of 1999–2000, UCSC water usage represented slightly less than 4

[18] Associate membership in the Alumni Association is open to the general public.

percent of the City's annual 4.4 billion gallon demand. Over the past decade, UCSC has implemented a number of water efficiency measures, with the result that although campus enrollments grew by some 24 percent between 1987 and 2000, campus water use increased only 0.2 percent over the same period (University of California, Santa Cruz 2001b).

Nonetheless, studies suggest that City water supplies may be inadequate to meet existing demand. An engineering analysis completed for SCWD's Master Plan Study in 1989 found that the City's water production system would be able to meet demand in only 90 percent of non-drought years through 2005. A more recent SCWD analysis showed that the system has actually been inadequate to meet average demand in 21 percent of years, based on hydrologic data for the period 1935–1995. If worst-case conditions similar to those at the end of the 1976–1977 drought were to recur, the system would likely fall 46 percent short of meeting average annual demand (University of California, Santa Cruz 2001b).

In response to these concerns, the City of Santa Cruz has begun preparing an integrated resources management plan intended to address potential water supply shortfalls through a combination of conservation, emergency restrictions, and development of additional water supplies (seawater desalination, groundwater development, wastewater reclamation, maximum use of existing sources, and/or new reservoir storage). Related information is provided in the City's Urban Water Management Plan (2000), which is updated every 5 years. The City of Santa Cruz is contractually obligated to provide sufficient water to serve UCSC growth; however, UCSC has committed to assist the City in funding development of new water supplies (University of California, Santa Cruz 2001b).

Sanitary Sewer

The UCSC campus is served by the Santa Cruz Wastewater Treatment Plant (SCWTP), located between Neary Lagoon and Bay Street. The SCWTP has an average dry weather flow capacity of 17 million gallons per day and is presently operating at slightly less than 60 percent of its capacity (City of Santa Cruz 2003).

The UCSC campus is served by the City's Oxford Street and Arroyo Seco sewer mains, both of which sometimes operate above their design capacity and have been identified as potentially inadequate. Needed improvements to these mains as well as other City of Santa Cruz sanitary sewer infrastructure will be addressed in the City's Sewer Master Plan now in preparation. UCSC has committed to provide financial assistance for upgrades to the Oxford and Arroyo Seco mains (University of California, Santa Cruz 2001b).

Solid Waste

All solid waste from the UCSC campus is disposed of at the City of Santa Cruz Landfill. Although increased enrollment and progressive development of the campus have the potential to result in increased waste generation, the EIR

prepared for the LRDP incorporated mitigation measures requiring campuswide recycling and composting programs, which have largely offset the effects of campus growth on waste generation (University of California, Santa Cruz 1988). The Santa Cruz Public Works Department confirms that landfill capacity is adequate to serve solid waste needs in the area through the year 2038. This is due primarily to efforts implemented through the LRDP planning process (University of California, Santa Cruz 1999).

Other Utilities

Other utility services on the UCSC campus includes electricity and gas, which are both provided by PG&E, and telephone and high-speed internet services provided by SBC California (University of California, Santa Cruz 1999).

Transportation and Traffic

Traffic enters the UCSC campus primarily through two entrances: the main campus entrance located north of the intersection of High Street and Bay Drive, and the west entrance off Empire Grade at Heller Drive (Figure 1-2). Empire Grade connects the main campus entrance and the west entrance, extending north to the community of Bonny Doon. High Street is a 2-lane residential arterial street. Bay Drive is a 4-lane arterial divided road between High Street and Escalona Drive, and a 2-lane residential arterial street between Escalona Drive and Mission Street.

The campus road network comprises four major roads, three of which are configured in a semicircular loop. The main roadways providing access to or surrounding the proposed development sites include: Glen Coolidge Drive, Bay Drive, Empire Grade/High Street, Hagar Drive, and Modular Village Access Road. As shown in Figures 1-2 and 2-1, Inclusion Area D is generally located between Empire Grade/High Street to the south and west, and the intersection of Glen Coolidge Drive and Hagar Drive to the east and north. Both Inclusion Area A and the LPG site are located directly off Empire Grade.

Traffic count data indicate that in the fall of 2001 a total of approximately 22,000 trips were made to and from the campus each day[19] (University of California, Santa Cruz 1999), representing a 14 percent increase in the number of daily trips by comparison with the 1988–1989 traffic base year evaluated in the LRDP EIR (University of California, Santa Cruz 1988). The 2000–2001 traffic count data are within the range predicted in the LRDP EIR and subsequent EIRs analyzing campus development (University of California, Santa Cruz 1999, 2001b).

During the period between 1988–1989 and 2000–2001, the campus experienced a 27 percent increase in enrollment. The disparity between enrollment increases and increases in daily traffic volumes may reflect improvements in the campus

[19] Year 2002 traffic data for the campus and adjacent roadway network are not available. This EA uses the most recent data available, those for fall 2001.

Traffic Demand Management (TDM) program and in Santa Cruz Metropolitan Transit District (SCMTD) service to the campus, as well as the effect of parking fee increases. However, despite the improvements that have been made, traffic on campus and in adjacent residential neighborhoods is subject to intermittent congestion, and traffic management continues to be a concern as the campus is developed. The need to provide adequate parking for the campus community and visitors has also been identified as a concern.

Chapter 4

Environmental Consequences

Introduction

This chapter analyzes the environmental effects that could result from implementing the Proposed Action. It also describes the potential environmental effects of the No Action Alternative, the Off-Campus Housing Alternative, and the Reduced Project Alternative. The Proposed Action and these alternatives are described in detail in Chapter 2. Chapter 3 describes the existing environmental conditions that provide the baseline for this analysis. A comparison of impacts (after mitigation) under each alternative is included in Table 4-1 at the end of this chapter.

Effects on the Physical Environment

Effects on Visual Resources

Alternative 1 (No Action)

The No Action Alternative would not result in any changes in land use in the project area. Visual resources, viewsheds, and light and glare conditions would remain unchanged.

Alternative 2 (Proposed Action)

Aesthetic Effects

If the Proposed Action were implemented, two principal elements of the project would affect visual resources in the project area: the proposed faculty and staff housing development on Inclusion Area D, and the ERC equipment storage facility at the LPG site.

Ranch View Terrace Development

The development proposed for Inclusion Area D would alter the existing viewshed by converting its use from small-scale agricultural production,

composting operations, rock sorting, and open grasslands to a residential community. The project site is visible from a number of local roadways and vantage points throughout the City of Santa Cruz, and is located near the National Register–eligible Cowell Ranch Historic District. Consequently, any changes in the existing viewshed could be important. However, the UCSC campus already supports a wide variety of structures, and dense residential and urban development dominates the viewshed between the campus and the Pacific Ocean to the west. In addition, as discussed in *Cultural Resources* in Chapter 3, the Cowell Ranch Historic District maintains only a moderate degree of integrity, because (1) many of the original buildings within the district have been altered to support modern land uses, including university administrative functions, and (2) recent infrastructure such as parking lots, administrative buildings, roadway network, and bike trails have been added to the district and vicinity.

The LRDP stresses the importance of preserving existing visual resources as the campus continues to be developed. LRDP visual resources guidelines include

- relying on infill and clustering facilities;
- maintaining prime viewsheds and viewpoints from the Campus Core and Colleges;
- restricting the height and bulk of development within visually sensitive areas; and
- maintaining aesthetically valuable trees, landforms, and landmarks.

The proposed development was designed to meet these guidelines by

- clustering the proposed facilities to minimize the area affected by visual changes;
- maintaining prime viewsheds and viewpoints from the Campus Core and Colleges by locating the development in the northern half of Inclusion Area D, which is partially screened from adjacent land uses by existing vegetation and the topography of the area;
- restricting the height of the development to approximately 35 feet to minimize the disruption of existing views from adjacent land uses;
- using a rural vernacular architectural style consistent with the adjacent historic structures and the grassland setting; and
- maintaining aesthetically valuable trees and vegetation to the greatest extent possible, while using drought-tolerant, low maintenance landscaping to enhance the development.

Because the proposed development would be constructed near existing residential development and would be situated in an area partially screened from view by topography and existing vegetation, and because it would incorporate specific design elements for consistency with the surrounding visual and aesthetic character, it is not expected to result in an adverse effect on the visual character of the project site or nearby areas or result in significant impacts.

Conclusion: Possible adverse impacts are expected to be minimized below significance.

LPG Site

The LPG site is surrounded by a large earthen berm and a chain-link fence, and is partially screened by a grove of eucalyptus trees; views of the site are further impeded by Empire Grade and adjacent residences. Land use at this site would not change substantially following project implementation, and, like existing structures on the site, the proposed new Butler building would be largely screened by the features described above. The wall suggested as an optional measure to exclude CRLFs from the LPG Site (see *Effects on Biological Resources* below) would further screen storage on the site from view, and could be an aesthetic benefit by comparison with the existing chainlink and berm, if properly designed. Consequently, additional development at this site is not expected to result in an adverse effect on the visual character of the LPG site or the surrounding area.

Conclusion: Possible adverse impacts are expected to be minimized.

Light and Glare Effects

During construction, the use of heavy equipment would introduce a minimal amount of additional glare generated by reflective metal and glass surfaces into the project vicinity. However, because the increase in glare would be small and short in duration, effects are expected to be minimal. Construction activities would take place during the daylight hours only, so no increase in nighttime light generation is expected during project construction.

The proposed structures and adjacent paved areas (streets and parking areas) could result in long-term increases in glare in Inclusion Area D. However, parking lots would be situated within the residential clusters in order to minimize the glare experienced outside the project area. In addition, the residences and ancillary facilities would be sided and roofed with wood and concrete materials that are low-sheen and non-reflective, to minimize daytime glare and reflectivity from the development. The proposed landscaping would further reduce daytime glare from these surfaces. Therefore, glare generated by paved areas and structures in the proposed development is expected to be minor.

The proposed development has the potential to substantially increase light generation and spill in the project vicinity as a result of everyday use in residences, as well as low-level safety lighting that would remain illuminated throughout the night. The effects of residential lighting would be minimized by the proposed configuration with residences clustered to face one another. In addition, outside safety lighting would be designed to avoid the illumination of potentially sensitive habitat areas, including the eucalyptus grove and grassland habitat adjacent to the site. The intensity of safety lighting would be limited to the minimum necessary to meet safety requirements, and luminaires would be shielded and/or equipped with reflectors to minimize light spill and generation of fugitive glare. In addition, as discussed in Chapter 2 (*General Project Measures*

to Minimize Environmental Effects), further measures would be implemented to offset potential adverse effects on the relatively unlit project area and surrounding lands that may be caused by the additional introduction of light. These include restrictions on the type, positioning, and locations of luminaries that would be included in and around the project development to minimize additional light from entering adjacent, unlit areas that surround the proposed development site. Therefore, implementation of the development project would not substantially increase light sources in the area, and would not result in an adverse effect on adjacent lands.

If security lighting is included in the designs for the ERC equipment storage facility at the LPG site, it could also increase fugitive light during nighttime hours, and would be designed in accordance with the measures itemized for the development project to avoid or minimize any adverse effects on the surrounding area.

Conclusion: Adverse impacts are expected to be minimized below significance.

Alternative 3 (Off-Campus Housing)

The Off-Campus Housing Alternative could have greater impacts to visual resources than the Proposed Action because development on the Swenson Site could affect views of/from Antonelli Pond, a number of local roadways, and the City of Santa Cruz Moore Creek Preserve. Impacts to scenic resources and visual character would be minimized, due to presence of nearby development and the lack of significant resources on the site. Light and glare impacts would be similar to the Proposed Action because of the numerous light sources in the area. Like the Proposed Action, this alternative would implement lighting control measures discussed in Chapter 2 (*General Project Measures to Minimize Environmental Effects*), and therefore would not substantially increase light sources in the area, and would not result in an adverse effect on adjacent lands.

Conclusion: Adverse impacts are expected to be minimized below significance.

Alternative 4 (Reduced Project on Inclusion Area D Site)

The Reduced Project Alternative may reduce visual impacts because the development footprint would be smaller than that of the Proposed Action, but it would still affect visual resources because an undeveloped site would be partially developed and landscaped. Like the Proposed Action, the Reduced Project Alternative would not be expected to adversely affect the visual character of the area because it would be partially screened from view and would be designed for consistency with the surrounding visual character. The Reduced Project Alternative would result in a lower level of indirect impact to the Cowell Ranch Historic District because less development would be visible from the Historic District and the project site would retain more of its current rural characteristics. Similar to the Proposed Action, the Reduced Project Alternative would

implement lighting control measures discussed in Chapter 2 (*General Project Measures to Minimize Environmental Effects*), and therefore would not substantially increase light sources in the area, and would not result in an adverse effect on adjacent lands.

Conclusion: Adverse impacts are expected to be minimized below significance.

Effects on Air Quality

Alternative 1 (No Action)

The No Action alternative would include no construction activities. Inclusion Areas A and D would continue to be used for minor agriculture, composting, rock separating, and managed open space. The LPG site would continue to be used for equipment storage, but no new storage facility would be constructed. Therefore, there would be no change from existing levels of criteria pollutant emissions within the project area.

Alternative 2 (Proposed Action)

Development of faculty and staff housing and related infrastructure on Inclusion Area D and construction of an equipment storage facility at the LPG site would result in increased emissions of criteria pollutants. Construction worker commute trips and construction activities such as grading, excavation, and fill placement would result in short-term emissions increases. Residential and maintenance traffic are expected to result in minor long-term increases. The following sections provide additional details.

Short-Term Effects

The MBUAPCD considers most construction-related increases in criteria pollutant emissions temporary and incorporates them into its emissions forecasts. Consequently, project proponents are not required to conduct qualitative analyses of construction-related criteria pollutant emissions, except for PM10. The MBUAPCD requires quantitative analysis of PM10 emissions because even temporary increases in PM10 emissions can affect the health of surrounding populations.

The MBUAPCD's primary threshold for construction-related PM10 emissions is based on the area subject to grading each day. If less than 2.2 acres would be subject to major grading and excavation, or if less than 8.1 acres per day would be subject to minor grading, PM10 emissions do not require mitigation. Because project construction would include approximately 1.0 acre of major earthmoving per day and approximately 0.15 acre of minor earthmoving per day, no mitigation is required.

Conclusion: No significant impacts are expected.

Long-Term Effects

Sources of long-term emissions increases related to project occupation/operation are expected to include

- resident traffic,
- maintenance-related traffic, and
- emergency generators.

Although the project would increase the population on campus, resulting in a greater number of vehicles on campus, increased availability of on-campus faculty and staff housing would reduce the need for commute trips from off-campus locations. Short trips from the new housing complex to destinations on campus would be accommodated at least in part by alternative transportation provided by the UCSC Shuttle Service and the Santa Cruz Metropolitan Transit District, further reducing vehicle trips. Consequently, post project increases in mobile-source criteria pollutants would be minimal, and are expected to fall far below the established state and Federal standards. Maintenance-related traffic to and from the proposed development would be infrequent and would involve a small number of vehicles, and thus would not contribute appreciably to mobile-source emissions of criteria pollutants.

Use of the ERC equipment storage facility at the LPG site would generate a negligible amount of additional traffic consisting of maintenance vehicles that would use the site on a regular basis. This additional vehicle traffic would not generate mobile-source criteria pollutant emissions in excess of state or Federal standards.

Emergency generators would be operated for short, infrequent periods only. As a result, increases in stationary-source emissions as a result of project implementation are expected to be minimal.

Conclusion: No significant impacts are expected.

Alternative 3 (Off-Campus Housing)

Development under the Off-Campus Housing Alternative would reduce the short-term construction dust and vehicle emission impacts associated with the Proposed Action. Areas requiring site preparation (including grading, excavation, and fill placement) would be reduced in extent and fewer units would be constructed, resulting in a shorter construction period. Dust impacts during a particular day of construction would be similar to those of the Proposed Action. Fewer trips would be generated by this alternative, and therefore, long-term area and mobile source emissions and carbon monoxide concentrations at local intersections would be less than those of the Proposed Action.

Conclusion: No significant impacts are expected.

Alternative 4 (Reduced Project on Inclusion Area D Site)

Development under the Reduced Project Alternative would reduce the short-term construction dust and vehicle emissions associated with the Proposed Action. Areas requiring site preparation (including grading, excavation, and fill placement) would be reduced in extent and fewer units would be constructed, resulting in a shorter construction period. Dust impacts during a particular day of construction, however, would be similar to those of the project. Fewer trips would be generated by the alternative, and therefore, long-term area and mobile source emissions and carbon monoxide concentrations at local intersections would be less than those of the Proposed Action.

Conclusion: No significant impacts are expected.

Effects Related to Geology, Geologic Hazards, and Soils

Alternative 1 (No Action)

If the No Action Alternative were selected, no construction would take place on the proposed project site or at the LPG site. Consequently, there would be no change in seismic safety hazards associated with the site. Landslide hazards would also remain unchanged because no grading or fill activity would take place, no additional load would be imposed on the slopes, and no change in watering or stormwater management practices would occur. Additionally, no changes in conditions, practices, or processes related to soil resources within the study areas are expected because no construction would take place on the proposed Inclusion Area D project site or at the LPG site. Inclusion Area A would continue to be managed as open space, and grazing use would continue.

Conclusion: No impacts are expected to be associated with this alternative.

Alternative 2 (Proposed Action)

Seismic Hazards

No faults recognized as active by the State of California traverse the UCSC campus. Consequently, the proposed project is unlikely to be subject to surface fault rupture. Although the State of California has not issued seismic hazard maps for the project vicinity, the potential for liquefaction and other types of seismically induced ground failure is also considered low based on substrate conditions on the site (Pacific Crest Engineering 2002).

The campus is located in a seismically active area, in close proximity to several important active faults, and is thus likely to experience strong groundshaking

during the lifetime of the proposed project. Because strong groundshaking can cause severe structural damage, and thus represents a potential hazard to property and public safety, construction of the proposed Ranch View Terrace development in a seismically active area has the potential to result in exposure of persons and property to risks associated with groundshaking. These risks would be substantially reduced by ensuring that the Developer and all contractors retained by the Developer follow recommendations of site-specific geotechnical investigations and that design and construction meet or exceed the requirements of the most recent version of applicable City codes and the California Building Code, as discussed in Chapter 2 (*General Project Measures to Minimize Environmental Effects)*.

Conclusion: Possible adverse impacts are expected to be minimized.

Landslide Hazards

Geotechnical investigations for the proposed project have concluded that existing risk of slope failure, including seismically induced landslides, is low for the comparatively gentle slopes of the immediate project site (Steven Raas & Associates 1991, Pacific Crest Engineering 2002). Existing risks may be somewhat greater on the steeper slopes that bound the site's eastern margin and those in the vicinity of LPG site. To ensure that grading and fill activity associated with project construction does not create or contribute to slope failure hazard, the Developer would ensure that all recommendations of the site-specific geotechnical investigations are implemented, and that project design and construction adhere to accepted industry standards for good earthwork practices and meet or exceed all applicable codes and regulations.

The proposed project is expected to incorporate drought-tolerant, low-maintenance landscaping. Little or no watering would be needed in most years, and routine watering of landscaped common areas is thus not expected to appreciably decrease slope stability. However, if irrigation is used it would be important for UCSC to ensure that drip or other equipment is maintained in good condition so that no overwatering occurs.

As discussed in Chapter 2 (*General Project Measures to Minimize Environmental Effects),* the proposed project would incorporate stormwater management systems designed to (1) ensure sufficient infiltration to maintain the seeps downslope from the project site, and (2) route excess runoff offsite to prevent increased erosion. Effective stormwater management would help to prevent excessive erosion or altered erosion patterns that could locally reduce slope stability.

Conclusion: Possible adverse impacts are expected to be minimized.

Soils

Much of the proposed Inclusion Area D project site is undeveloped and has been managed as open space. As a result, it is currently in a seminatural state,

although it supports primarily ruderal vegetation reflecting a history of disturbance. Because construction of the proposed project would result in conversion of open ruderal grassland to residential use, it would result in a minor loss of existing soil resources. Hydroseeding and irrigation of the phase 2 and phase 3 sites between rough grading and construction would ensure that soil erosion from these areas is minimized.

Most of LPG site is now hardscaped, so construction of the proposed equipment storage facility would not result in additional loss or alteration of soil resources.

The proposed project would incorporate drought-tolerant, low-maintenance landscaping in common areas. Little maintenance would be required, but any that does take place would prioritize the use of fertilizers and pest control measures meeting the requirements defined in the Ranch View Terrace HCP (Jones & Stokes 2004), to ensure that runoff from landscaped areas does not affect soil quality in adjacent areas that remain undeveloped.

Conclusion: Possible adverse impacts are expected to be minimized.

Alternative 3 (Off-Campus Housing)

Given the site location and underlying materials in the general area, there would likely be few geologic constraints to development at the Swenson Site. Therefore, impacts of the Off-Campus Housing Alternative would be similar to those of the Proposed Action.

Conclusion: Possible adverse impacts are expected to be minimized.

Alternative 4 (Reduced Project on Inclusion Area D Site)

The Reduced Project Alternative might reduce impacts related to geology and geologic hazards due to the reduced development intensity on the site. Similar to the Proposed Action, the Reduced Project Alternative would not expose people or structures to potential adverse effects involving fault rupture, strong seismic ground shaking, seismic-related ground failure, or landslides. Adverse effects related to these geologic hazards would be the same as for the Proposed Action because the Reduced Project Alternative would be constructed in the same location.

Conclusion: Possible adverse impacts are expected to be minimized.

Effects on Mineral Resources

Alternative 1 (No Action)

If the No Action Alternative is adopted, no construction would take place on the proposed project site or at the LPG site, and conditions related to minerals resources at both sites would remain unchanged. The No Action Alternative would also leave conditions related to mineral resources at Inclusion Area A unchanged.

Conclusion: No impacts are associated with this alternative.

Alternative 2 (Proposed Action)

Although the campus is within an area designated MRZ-3 for subsurface limestone resources, site-specific investigations conducted to date suggest that no carbonate resources are present at the Inclusion Area D project site itself (Pacific Crest Engineering 2002), so development of this site would have no effect on the availability of mineral resources. The LPG site is also within the larger campus area designated MRZ-3 for subsurface limestone resources, but because this site is already paved, construction and use of the site for the proposed equipment storage facility would have no effect on the availability of mineral resources. In addition, both sites are surrounded by campus land uses, including open space and historical resources. Any mineral resources present in nearby areas would therefore not be developed in the foreseeable future, and the presence of additional land uses incompatible with mining or minerals extraction operations would have no additional effect on the availability of mineral resources.

Inclusion Area A may support minor subsurface carbonate resources. However, the area is comparatively small, and because of existing campus land uses on and around this site, any resources it supports would not be developed in the foreseeable future. The new protective land use designation that would be applied to the site will preclude mineral resource extraction. Consequently, protection of this area as a preserve under the Proposed Action would not have an adverse effect on the availability of mineral resources.

Conclusion: No significant impacts are expected to be associated with this alternative.

Alternative 3 (Off-Campus Housing)

The Swenson Site is not designated as a mineral resource zone. Like the Proposed Action, the Off-Campus Housing Alternative would have no effect on the availability of mineral resources.

Conclusion: No significant impacts are expected to be associated with this alternative.

Alternative 4 (Reduced Project on Inclusion Area D Site)

The Reduced Project Alternative would be constructed in the same location as the Proposed Action, and therefore would result in the same no effect on mineral resources.

Conclusion: No significant impacts are expected to be associated with this alternative.

Hydrology and Water Quality

Alternative 1 (No Action)

If the No Action Alternative were adopted, no construction would take place on Inclusion Area D or at the LPG site, and there would be no change in land use, site drainage, area of impermeable surface (rate and quantity of surface runoff), slope conditions, or other features or processes that control the quality and quantity of surface water runoff. For the same reasons, groundwater recharge and discharge would also be unaffected under the No Action Alternative.

The No Action Alternative would also have no effect on conditions, practices, or processes related to surface- or groundwater hydrology and water quality at Inclusion Area A.

Conclusion: No impacts are expected to be associated with this alternative.

Alternative 2 (Proposed Action)

Construction of the proposed housing development and equipment storage facility would require grading, fill placement, and other activities that have the potential to increase localized erosion, contributing to elevated sediment content in surface runoff. In addition, the fuels and lubricants required for construction equipment, as well as common construction materials such as concrete, plaster, and paints, all have the potential to degrade surface water quality if they are spilled, discharged, or improperly managed. Because of the size of the Inclusion Area D project site, the Developer would be required to ensure that the construction contractor prepares and implements a storm water pollution prevention plan (SWPPP) that includes standard construction-site housekeeping and best management practices as well as spill prevention and response measures. Implementation of the measures in the SWPPP would help to reduce or avoid construction-related effects on water quality.

Construction of housing in an area that is now open space would result in alterations to surface topography to accommodate housing pads, road beds, and other infrastructure. If incorrectly designed or constructed, recontoured slopes could be subject to increased erosion, with the potential to increase sediment

delivery to surface waters. This concern would be addressed by implementing erosion control measures discussed in Chapter 2 (*General Project Measures to Minimize Environmental Effects)*.

Construction of the proposed development would increase the area of impermeable surface on the Ranch View Terrace site, which is now open space and would support substantial areas of hardscape when construction is complete. Increasing impervious surface area has the potential to decrease groundwater recharge, possibly reducing subsurface flow to at least the northern seep downslope of the project site, which is believed to be fed by shallow groundwater. Implementation of the groundwater management plan, as discussed in Chapter 2 (*General Project Measures to Minimize Environmental Effects)*, would minimize adverse effects on groundwater flow throughout the project site and surrounding areas.

Although the access roads and driveways that would constitute much of the new hardscape area are expected to support comparatively small volumes of traffic (see related discussion in *Traffic and Transportation* below), they would nonetheless generate urban runoff with the potential to convey a wide range of urban pollutants. In addition, implementation of the project could result in indirect effects of the project on adjacent watersheds and stormwater drainage patterns. This would affect water bodies located downstream of the project area, including Arroyo Seco and Jordan Gulch, which support sensitive wildlife communities and habitats. However, implementation of the stormwater and groundwater management systems (these systems would be installed during phase 1), as discussed in Chapter 2 (*General Project Measures to Minimize Environmental Effects),* would minimize the effects of runoff on adjacent watersheds and waterbodies through the installation of infrastructure within both systems that would minimize changes in flow patterns and water quality. Therefore, the project is not expected to adversely affect adjacent watersheds or waterbodies or special-status species that occur in them.

The equipment storage facility at the LPG site would be situated on an area that is already hardscaped, and the area of impervious surface at the site would not be increased as a result of the project. The project would likely result in modification of the north side of the existing earthen berm surrounding the LPG site, but this is not considered an adverse effect because it would not alter natural surface drainage (which no longer exists on the site) and would not affect the small seasonal pond in the adjacent eucalyptus grove.

In addition, the Proposed Action is not expected to result in any adverse effect on conditions, practices, or processes related to surface- or groundwater hydrology and water quality at Inclusion Area A.

Conclusion: Possible adverse impacts are expected to be minimized below significance.

Alternative 3 (Off-Campus Housing)

Because of the proximity of the Swenson Site to sensitive hydrologic features (e.g., Antonelli Pond and Moore Creek) there is potential for greater hydrologic impacts related to surface flow, urban runoff, and changes in groundwater recharge rates than the Proposed Action. Potential changes in drainage patterns on the site could lead to increased erosion at drainage outlet locations (such as Moore Creek andAntonelli Pond). Like the Proposed Action, development on the Swenson Site could result in indirect effects on adjacent watersheds and stormwater drainage patterns; however, implementation of stormwater and groundwater management systems, as discussed in Chapter 2 (*General Project Measures to Minimize Environmental Effects*), would minimize runoff effects. Similarly, the Swenson Site Alternative would be required to address construction- and operation- water quality impacts through a SWPPP and best management practices, and would likely employ many of the same measures as the Proposed Action.

Conclusion: Possible adverse impacts are expected to be minimized below significance.

Alternative 4 (Reduced Project on Inclusion Area D Site)

Under the Reduced Project Alternative, water quality impacts would be lessened somewhat because of the smaller construction area, fewer number of units, less impermeable surface area, and less pollution-causing activities, such as vehicle use. Similar to the Proposed Action, the Reduced Project Alternative would address potential erosion/sedimentation and surface water quality impacts through the implementation of a SWPPP and best management practices. Also like the Proposed Action, development on the project could result in indirect effects on adjacent watersheds and stormwater drainage patterns; however, implementation of stormwater and groundwater management systems, as discussed in Chapter 2 (*General Project Measures to Minimize Environmental Effects*), would minimize runoff effects.

Conclusion: Possible adverse impacts are expected to be minimized below significance.

Effects Related to Hazardous Materials

Alternative 1 (No Action)

Risk of exposure to radioactive materials and toxic materials is presently considered minimal, and would remain unchanged under the No Action Alternative.

Conclusion: No impacts are associated with this alternative.

Alternative 2 (Proposed Action)

No radioactive or toxic materials are known to be present on the project site, and risks associated with exposure to hazardous materials during both project construction and project occupancy are expected to be very low. As part of the SWPPP prepared to reduce or avoid construction-related effects on water quality (see *Hydrology and Water Quality*), the contractor will be responsible for preparing and implementing a Spill Prevention and Response plan that regulates the use of hazardous and toxic materials, such as fuels and lubricants for earthmoving equipment. In addition, as discussed in Chapter 2 (*General Project Measures to Minimize Environmental Effects)*, risks will be further minimized by stopping construction activities if toxics or hazardous materials were discovered during construction.

Conclusion: Possible impacts are expected to be minimized.

Alternative 3 (Off-Campus Housing)

Similar to the Proposed Action, the Off-Campus Housing Alternative would not involve substantial use of hazardous materials or generation of hazardous wastes. Like Inclusion Area D, no radioactive or toxic materials are known to be present on the Swenson Site; however, due to prior agricultural use of the site, the potential exists for pesticide residues. Like the Proposed Action, a Spill Prevention and Response plan would be prepared and implemented for development at this site, and hazardous materials-related risks would be minimized as discussed in Chapter 2 (*General Project Measures to Minimize Environmental Effects)*.

Conclusion: Possible impacts are expected to be minimized.

Alternative 4 (Reduced Project on Inclusion Area D Site)

Similar to the Proposed Action, the Reduced Project Alternative would not involve substantial use of hazardous materials or generation of hazardous wastes. No radioactive or toxic materials are known to be present on the project site, and like the Proposed Action, a Spill Prevention and Response plan would be prepared and implemented for development at this site, and hazardous materials-related risks would be minimized as discussed in Chapter 2 (*General Project Measures to Minimize Environmental Effects)*.

Conclusion: Possible impacts are expected to be minimized.

Effects on the Biological Environment

Alternative 1 (No Action)

If the No Action Alternative is adopted, no construction would take place on the proposed Ranch View Terrace site or at the LPG site, and there would be no change in existing land uses or management activities in these areas. Therefore, existing conditions would remain the same, and the No Action Alternative would have no additional effects on biological resources. In addition, the No Action Alternative would have no effect on biological resources in Inclusion Area A.

Conclusion: No impacts are associated with this alternative.

Alternative 2 (Proposed Action)

Short-term Effects – Inclusion Area D and LPG Site

California Red-Legged Frog

California red-legged frogs could move through the Ranch View Terrace site during the construction period, although the probability is considered low. Because CRLFs are largely nocturnal, it is unlikely that any frogs that did cross the site would do so during the daytime hours when construction activities are occurring. However, they could be present at the start of daily construction activities. In addition, if construction occurs during the winter, depressions created by construction activities could fill with water, potentially attracting frogs to the sites. California red-legged frogs on the site during construction activities would be at risk of death or injury (i.e., take) from construction vehicles and equipment.

It is unlikely that frogs occur on the LPG site because it is fenced, paved, and surrounded by an earthen berm. The site does not provide any suitable natural habitat for frogs. However, removal of existing debris piles and construction of the proposed Butler building on the LPG site could injure or kill CRLFs if construction occurs during the rainy season when there is a low potential for frogs to use debris piles for temporary refuge.

Any disturbance or mortality of CRLF would represent an adverse effect, because the species is protected under the Federal ESA. However, application of the construction avoidance and minimization measures summarized in Chapter 2 (*Description of the Alternatives, Including the Proposed Action*) and detailed in Chapter 5 of the Ranch View Terrace HCP (Jones & Stokes 2004) would minimize potential adverse effects on frogs as a result of construction activities. Permanent protection and long-term management of the Inclusion Area A Preserve would mitigate any short-term impacts to this species.

Conclusion: Adverse effects would be minimized below significance.

Ohlone Tiger Beetle

Ohlone tiger beetles could be attracted to the Ranch View Terrace site during or after grading because grading activities would remove existing vegetation, creating bare soil in areas that are currently unsuitable for the species; beetles have been observed to colonize previously unsuitable sites near known populations when vegetation is cleared. Any beetles entering the construction site could be killed or injured by a range of construction activities, including additional vegetation clearing; grading, excavation, and fill placement; building construction; hardscape development; and landscaping.

The nearest on-campus beetle population is 0.6 mile from the proposed development site on Inclusion Area D. The flight range of beetles during their activity period (January–May), and the distance from which they could be attracted to the construction site are unknown. Beetles are considered very unlikely to colonize the active Ranch View Terrace construction site, but the possibility cannot be dismissed entirely because of the unavailability of data. Because the Ranch View Terrace development would be located on Elkhorn sandy loam, OTBs are not expected to breed on the site (see discussion in Jones & Stokes 2004).

Once vegetation becomes established (i.e., landscaping or irrigated grasses and herbs on the rough graded and unused sites of phase 2 and 3 prior to construction), the site would no longer be attractive to beetles, and the potential for adverse effects on the species as a result of occupation/operation of the proposed housing development is considered minimal.

Construction and operation of the equipment storage facility at the LPG site is expected to have no effect on OTB, because the species does not use the vicinity of the site, and the site is not located on a migration route.

Conclusion: Adverse impacts would be minimimized and mitigated below significance.

Monarch Butterflies

Monarch butterflies migrate through the area between October and March, and therefore may be present during the projected spring 2004–fall 2005 construction window. Project construction would not require removal of any trees in the eucalyptus grove near the project site; consequently, there would be no direct effect on any butterfly colonies that might be present. However, excessive noise or dust could disrupt normal behaviors such as thermoregulation; this would be especially detrimental when the temperature is warm and monarchs are active. Because various measures would be implemented to minimize construction-related noise and dust generation (see Chapter 2 (*General Project Measures to Minimize Environmental Effects Air Quality* and *Noise*), the potential for adverse effects is considered low.

Potential impacts will be further reduced by requiring a qualified biologist to conduct surveys and, if butterflies were found, requiring the UC Regents to

implement appropriate measures as discussed in Chapter 2 (*General Project Measures to Minimize Environmental Effects).*

Conclusion: Potential adverse effects would be minimized.

Raptors

Raptors may use the large eucalyptus grove adjacent to Inclusion Area D and the LPG site for roosting and nesting, and may forage in nearby grassland areas. In general, raptors nest from March 1 to August 31. Raptors are protected under California Fish and Game Code.

Construction activities, and construction-related noise and dust, could disturb raptors using the eucalyptus grove and grassland areas. As described in Chapter 2 (*General Project Measures to Minimize Environmental Effects Air Quality* and *Noise*), the project will incorporate measures to minimize construction-related noise and dust generation, but these measures may not be sufficient to preclude effects on raptor nesting, foraging, and roosting. Because there are large areas of open grassland in the surrounding area, temporary disturbance of raptor foraging in grasslands immediately adjacent to the project site would not represent an adverse effect. Because any disturbance of nesting or roosting raptors would be considered adverse, surveys and appropriate measures, as discussed in Chapter 2 (*General Project Measures to Minimize Environmental* Effects) will be implemented to minimize potentially adverse effects.

Conclusion: Potential adverse effects would be minimized.

Migratory Birds

Migratory birds may use the eucalyptus grove adjacent to the proposed development areas at Inclusion Area D and the LPG site. Migratory birds and their nests are protected under the California Fish and Game Code and the Federal Migratory Bird Treaty Act. Destruction of migratory bird nests or disturbance that results in behavior modification (e.g., causing flight or nest abandonment) would represent an adverse effect or take on migratory birds. Construction activities, and construction-related noise and dust, could disturb migratory birds in the eucalyptus grove. As described in Chapter 2 (*General Project Measures to Minimize Environmental Effects Air Quality* and *Noise*), the project will incorporate measures to minimize construction-related noise and dust generation, but these measures may not be sufficient to prevent all adverse effects on migratory bird use. Because any disturbance will be considered adverse, surveys and appropriate measures, as discussed in Chapter 2 (*General Project Measures to Minimize Environmental* Effects) will be implemented to minimize potentially adverse effects on migratory birds.

Conclusion: Potential adverse impacts would be minimized.

Long-Term Effects – Inclusion Area D and LPG Site

California Red-Legged Frog

Permanent Loss of Feeding and Sheltering Habitat at Inclusion Area D

Development of the Ranch View Terrace site would result in the loss of approximately 7.5 acres of marginal upland habitat for CRLF. The remaining 5.5 acres of the development footprint, including the existing dirt access road, rock pile, and compost area, are highly disturbed and are unsuitable for use by CRLFs. Excavation of the gas utility trench in the eucalyptus grove south of Ranch View Terrace would temporarily disturb approximately 500 square feet (0.01 acre) of marginal upland habitat that may occasionally be used by dispersing frogs.

No natural habitat for CRLF would be removed by construction of the equipment storage facility at the LPG site.

A total of 7.5 acres of marginal upland habitat for CRLF would be removed by the proposed development. However, because of the marginal quality of this habitat, and the large expanse of similar habitat that would continue to provide feeding and sheltering opportunities of equivalent quality, this effect is considered minimal.

Conclusion: No significant impacts are expected.

Potential for Roadkill on New Roads

Road development would introduce vehicle traffic into the Ranch View Terrace area and would create the potential for roadkill of any CRLFs that may move across roads. However, because frogs have never been seen on the Inclusion Area D site, the chance of roadkill of CRLFs on new Ranch View Terrace roads is considered very low. Development would create or improve approximately 3,800 linear feet along the following roads on the Ranch View Terrace site:

- the primary access road (approximately 600 feet of existing road would be improved),
- the primary loop road (approximately 1,400 feet of new road would be constructed),
- the secondary emergency and service road (approximately 600 feet of existing road would be improved), and
- the utility access road (approximately 600 feet of existing road would be improved).

The likelihood of roadkill would be greatly reduced by the new barriers to movement posed by the housing development and new landscaping.

Daily use of the primary loop road by residents could injure or kill CRLFs, if any occasionally move through the project area. The risk to frogs would be greatest after dark, when their movements are most likely to occur. However, because vehicular traffic is expected to be lowest during this time, because the area would be illuminated by residential and safety lighting, and because the primary loop road would be constructed largely on the interior of the Ranch View Terrace development, away from undeveloped land most likely to be used by frogs, the potential for mortality of CRLF is expected to be minimal. The placement of the roads to the interior of the project will ensure that the frogs encounter the

development and landscaping first. The presence of human activity should deter frogs from proceeding toward the interior road.

Periodic use of the secondary service road between the Arboretum and the Farm could also result in injury or mortality of frogs. CRLFs are not known to occur on the Farm, however, and frog movement between the Arboretum and the Farm is expected to be minimal to nonexistent. Because the secondary road would be closed to residents, vehicular traffic would be very light, and the likelihood of frog roadkill is considered very low.

As with the other roads in the area, periodic use of the utility access road along the eastern edge of Inclusion Area D could result in injury or mortality of frogs. However, frog movement across the road is expected to be infrequent and extremely low-volume because the utility road borders developed areas to the east. In addition, utility vehicle traffic on this road would be infrequent. Consequently the potential for frog roadkill on the utility access road is considered minimal.

Conclusion: Minimal impacts are expected.

Potential for Mortality Resulting from Operations at the LPG Site

Ongoing use of the LPG site could affect CRLFs. Although it is unlikely, frogs dispersing from the Arboretum Pond could seek temporary refuge under the existing debris piles on the site or debris piles created during future use. Moving or clearing debris or materials stockpiles during the CRLF dispersal period could injure or kill frogs using them for refuge. Because frogs are unlikely to use this site, and because the site is frequently disturbed by human activity associated with moving equipment and stored materials, the potential for effects on frogs is considered low. The chance of take at this site could be further reduced if UCSC replaced the existing chain-link perimeter fence with concrete wall or similar structure that could prevent frogs from entering the site. UCSC may implement this optional measure in the future.

Conclusion: Adverse impacts would be mitigated below significance.

Potential Increase in Predation

Occupancy of the proposed Ranch View Terrace development could increase the population of animals known to kill or injure CRLFs in other areas, including domestic cats and dogs, feral cats, and native wildlife such as raccoons and opossums (*Didelphis virginiana*). Free-ranging domestic animals may injure or kill CRLFs that move occasionally through this area; cats in particular may also roam toward frog habitat west of Ranch View Terrace. Garbage, recycling waste, pet food, and unauthorized feral cat or wildlife feeding stations may also attract feral cats and native wildlife to the project area. However, through implementation of the proposed ongoing use restrictions, as described in the Ranch View Terrace HCP (Jones & Stokes 2004), pets would be allowed in the Ranch View Terrace development under restricted conditions only. Cats would be allowed only indoors, and dogs would be allowed in the common areas of Ranch View Terrace on leashes only. These restrictions would be enforced by the UCSC Campus Police. In addition, lidded waste and recycling receptacles that discourage foraging by CRLF predators would be installed in common areas

throughout Ranch View Terrace. As a result, effects on frogs from increases in predation are expected to be minimal.

Conclusion: Minimal impacts are expected.

Permanent Removal of Unoccupied but Suitable Ohlone Tiger Beetle Habitat

Construction of the new utility road would remove approximately 0.20 acre of unoccupied but suitable habitat for OTB along the utility corridor on the eastern edge of Inclusion Area D. The mowed grass corridor presently contains barren or sparsely vegetated patches that may provide suitable habitat for OTB foraging and/or reproduction. Surfacing the proposed utility road would eliminate these patches of bare ground. However, because the area along the proposed utility road alignment is already highly disturbed, the beetle does not currently use this site, and lands within the Inclusion Area A and D Preserves would be enhanced to support existing and potential future populations, respectively, the overall effect on potential habitat for OTB populations is considered beneficial.

Conclusion: A beneficial impact, though not significant, is expected.

Permanent Loss of Raptor Foraging Habitat

Raptors typically require hundreds of acres of grassland to forage successfully for small mammals and birds. The proposed development would marginally reduce the amount of grassland and open space available as foraging habitat for raptors such as the golden eagle, white-tailed kite, and northern harrier, and would also marginally decrease the prey base for these species. Specifically, implementation of the project could result in the loss of as much as 13 acres of raptor foraging habitat, including non-native grasses and weed-dominated areas. However, the majority of this habitat is of low to moderate quality. In addition, extensive areas of grasslands would be preserved in the Inclusion Area A and D preserves. Suitable raptor foraging habitat is also present throughout the campus and in adjacent open areas, and the amount and quality of habitat lost as a result of the Ranch View Terrace development would be small compared to the amount of foraging habitat available in the vicinity. Therefore, the loss of foraging habitat is considered minimal.

Conclusion: No significant impacts are expected.

Effects of Increased Lighting on Nocturnal Species

Many mammals, birds, and amphibians are active at night. The portion of Inclusion Area D proposed for development is currently unlit at night, and existing vegetation and the area's rolling topography limit light scatter onto the site from adjacent developed areas. Exterior lighting along roads and among housing clusters, as well as fugitive interior light from residences, would increase the amount of artificial illumination potentially affecting the remaining open grasslands. Habitat that is currently suitable for wildlife use could be rendered unsuitable for some species as a result of nighttime illumination. However, as described in Chapter 2 (*General Project Measures to Minimize Environmental Effects Visual Resources*), the project design incorporates low-intensity exterior

lighting focused away from undeveloped land to minimize the effects of fugitive light and other restrictions on luminaries to be used for the project to further reduce effects related to effects of nighttime illumination on wildlife habitat adjacent to the new development. In addition, extensive areas of open grassland are available for wildlife use in close proximity to the proposed area of development. Therefore, the total area of grassland habitat that could be affected by fugitive light would be small, and this effect is considered minimal.

Conclusion: Potential adverse impact would be minimized.

Short-Term Effects – Inclusion Area A

No short-term effects are expected on Inclusion Area A.

Long-Term Effects – Inclusion Area A

Cattle currently graze on Inclusion Area A for 3–4 months from July through October, outside the adult activity period for OTBs. Grazing creates open and bare ground and keeps grasses short, creating a habitat that is suitable for both Plan Species. The final rule listing for the CRLF states that, "light to moderate carefully managed livestock grazing that prevents of minimizes the excessive trampling of riparian and wetland habitat" is not expected to result in a violation of Section 9 of the ESA (Service 1996). However, some OTB larvae could be injured or crushed if burrows are trampled by cattle. In addition, beetles could be accidentally injured or killed as a result of human activity during HCP monitoring activities on the Inclusion Area A Preserve.

Vegetation management activities would be modified over time to maintain suitable habitat for the beetle. Cattle grazing will continue on the site in the near future, but management options may include raking, mowing, or grazing by livestock other than cattle (for a detailed description of these options and the decision-making process, see Chapter 5 of the HCP). As a result, effects on OTB are expected to be minimal. Ongoing monitoring would further ensure that the beetle is not adversely affected by management activities.

Conclusion: Adverse impacts would be minimized below significance.

Alternative 3 (Off-Campus Housing)

Development under the Off-Campus Housing Alternative would have greater adverse effects on the Plan Species than the Proposed Action. Ohlone tiger beetles are not known to occur at the site (see Figure 3-7 of the HCP), but potential habitat is present. Most of the site supports Watsonville loam soils (U.S. Soil Conservation Service 1980), which is considered suitable for OTB. Construction of the project on this site would have greater effects on OTB than the Proposed Action because of the removal of up to six acres of unoccupied but

potential habitat for the species. At least five acres of potentially suitable habitat for OTB would remain on the 11-acre site.

California red-legged frog are thought to disperse across the site between Antonelli Pond to the east and known breeding sites approximately 1.5 miles to the west near Wilder Creek. Moore Creek to the north may also serve as a dispersal corridor for CRLF in the region. California red-legged frogs have been found on the adjacent property to the west (HRG 1994; Mori 1997; City of Santa Cruz 1998; UCSC 2004a) and in Antonelli Pond. Temporary aquatic habitat may be present for CRLF on-site. Construction of the faculty housing project on this site would have greater adverse effects on CRLF than the Proposed Action because the Swenson site is a known and active dispersal route for frogs. The housing project could be designed to allow continued movement of CRLF across the site.

Effects on other special-status species from construction on the Swenson site would be similar to those on the Proposed Action because of the similarity in the grassland habitat between the sites. The Swenson site likely supports raptors such as Northern harrier, and migratory birds. It is unknown whether the site provides suitable habitat for monarch butterflies. Monarchs are known to nest in large numbers in the nearby Natural Bridges State Park. There could be potentially adverse effects related to proximity to Antonelli Pond; however, setbacks would be incorporated into the alternative, and the impacts would most likely be indirect in nature (e.g., increased human presence, introduction of invasive plants). Depending on the development site plan, the Off-Campus Housing Alternative could interfere with wildlife movement (in addition to CRLF) across the site, between Antonelli Pond and Younger Lagoon.

Conclusion: Adverse impacts to OTB are possible but these impacts would be minimized by retaining approximately half of the potential OTB habitat on-site. Adverse impacts to other biological resources would be minimized below significance.

Alternative 4 (Reduced Project on Inclusion Area D Site)

Potential construction-related impacts to CRLF, OTB, monarch butterflies, raptors, and migratory birds would be reduced under the Reduced Project Alternative. The likelihood for take would still exist under this alternative; however, like the Proposed Action, application of the construction avoidance and minimization measures in Chapter 2 of this EA and in Chapter 5 of the Ranch View Terrace HCP would minimize potential construction-related adverse effects on these species. Similarly, long-term adverse effects to these species and their habitat would be lessened under this alternative due to the reduced footprint and human presence.

Conclusion: Adverse impacts would be minimized below significance.

Effects on the Social Environment

Effects on Cultural Resources

Alternative 1 (No Action)

If the No Action Alternative were adopted, no construction would take place, and there would be no change in existing land uses or management activities. Therefore, the No Action Alternative would have no effect on cultural resources.

Conclusion: No impacts are associated with this alternative.

Alternative 2 (Proposed Action)

Potential for Damage to Buried Cultural Resources at Inclusion Area D and the LPG Site

Although no cultural resources are known to be present at the immediate project site, because of the area's long history of human occupation, there is a possibility that unknown cultural resources may be present in the subsurface. Buried cultural resources could be inadvertently unearthed, damaged, or destroyed during ground-disturbing activities required for project construction. Damage to, or destruction of, previously unknown cultural resources could represent an adverse effect. The effect would be avoided or minimized through implementation of the measures discussed in Chapter 2 (*General Project Measures to Minimize Environmental Effects Cultural Resources).*

Conclusion: Potential adverse effects would be minimized.

Potential for Damage to Previously Unidentified Human Remains at Inclusion Area D and the LPG Site

Although no human burials are known from the immediate project area, because of the area's long history of human occupation, there is some potential for ground-disturbing activities required for project construction to inadvertently unearth buried human remains. Damage to, or destruction of, human remains would represent an adverse effect. The effect would be avoided or minimized through implementation of the measures discussed in Chapter 2 (*General Project Measures to Minimize Environmental Effects Cultural Resources).*

Conclusion: Potential adverse effects would be minimized.

Effects on Cowell Ranch Historic District

Proposed improvement of the access road would occur within the boundary of the National Register–eligible Cowell Ranch Historic District and thus would constitute an effect on that resource. The project calls for the widening and paving of the existing access road that bisects the northern portion of the district and runs adjacent to two contributing resources: the hay barn (maintenance barn) and the blacksmith shop (classroom). Because the road itself is not considered a contributing element, the project would not result in the physical destruction, damage, or alteration of a historic resource. None of the contributing elements of the historic district would be moved from their historic location, and the property would not be neglected, transferred, leased or sold. Finally, the road improvement would not change the character of the property's use or elements of the setting that contribute to its historic integrity. Although construction would introduce visual and audible elements, these would only be introduced during the construction period. Therefore, under 36 CFR 800.5[b], the proposed improvements to the access road would have no adverse effect on the Cowell Ranch Historic District.

The proposed development on Inclusion Area D is not expected to affect the integrity of the Cowell Ranch Historic District. The architectural style of the residential development would be rural or ranch vernacular to complement the buildings in the adjacent historic district. The exterior wall siding would be natural wood and cement board, and building material colors would be coordinated to break down the scale and add individuality to the housing units. The sloped roofs would include both gabled and shed forms with short overhangs at the rakes and larger overhangs at the eaves. The highest roofs would be approximately 35 feet above the adjacent grade. Situated on the crest of the hill, the residential development would be largely screened from the kilns and cooperage that constitute the core of the historic district. Consequently, although development would occur in close proximity to the Cowell Ranch Historic District, no adverse effect on the integrity of that resource is expected.

Conclusion: No adverse effects are expected.

Alternative 3 (Off-Campus Housing)

Similar to the Proposed Action, the Off-Campus Housing Alternative would not substantially alter or destroy any known archaeological resources. Excavation could result in the discovery of previously undiscovered archaeological resources or human remains, a potentially adverse effect. Like the Proposed Action, this effect could be avoided or minimized through implementation of the cultural resource-related measures discussed in Chapter 2 (*General Project Measures to Minimize Environmental Effects*). The Off-Campus Housing Alternative would not have any direct or indirect effects (including visual intrusion) on the Cowell Ranch Historic District, and would not affect any known historic resources. Therefore, effects on historic resources would be less than those of the Proposed Action.

Conclusion: Potential adverse effects would be minimized.

Alternative 4 (Reduced Project on Inclusion Area D Site)

Similar to the Proposed Action, the Reduced Project Alternative would not substantially alter or destroy any known archaeological resources. Excavation could result in the discovery of previously undiscovered archaeological resources or human remains, but potentially adverse effects related to damage to or destruction of these resources would be reduced with implementation of measures discussed in Chapter 2 (*General Project Measures to Minimize Environmental Effects Cultural Resources*). Although the area of disturbance for the Reduced Project Alternative would be smaller, the impact would be similar because the location and extent of undiscovered resources are unknown.

Similar to the proposed project, the Reduced Project Alternative would include features (primary access road, bike path relocation and construction, and restoration/reinstallation of fences) that would directly affect the Cowell Ranch Historic District. These changes would not demolish, destroy, relocate, or alter any of the contributing elements of the district, and would have minimal effect on the district's significance. The visual effects on the historic district would be less under the Reduced Project Alternative, because the residential units would be set back further from the eastern boundary of the site.

Conclusion: Potential adverse effects would be minimized.

Effects on Land Use

Alternative 1 (No Action)

If the No Action Alternative were implemented, there would be no development and environmental conditions would not change. Therefore, there would be no project-related conflict with the applicable land use policies of the LRDP, and no project-related conflict with adjacent land uses.

Conclusion: No impacts are associated with this alternative.

Alternative 2 (Proposed Action)

Conflicts with Existing Land Uses and Policies

Inclusion Areas D and A

As described in Chapter 3, the LRDP designates Inclusion Areas A and D for the establishment of nonacademic university-affiliated facilities advantageous to the functioning of the campus community, with primary consideration given to faculty and staff housing use. The proposed Ranch View Terrace housing

development in Inclusion Area D would be consistent with this designation. However, creating the proposed preserves would require changing the existing land use designation for the Inclusion Area A Preserve from inclusion area and campus resource land to ecological reserve. Similarly, the Inclusion Area D Preserve would be redesignated from Inclusion Area to ecological reserve. Because only a portion of Inclusion Area A would be redesignated as a preserve, and future development would still be possible on the majority of the inclusion area (as much as approximately 32 acres), this conflict is considered minimal.

The establishment of a preserve on Inclusion Area A would retain both the existing agricultural (grazing) and recreational (pedestrian use trails) land uses through the site. These two uses are first and second priority land uses within the Coastal Zone, as defined in the Santa Cruz County General Plan. Because the use of Inclusion Area A would not change, implementation of the Proposed Action would be consistent with Coastal Zone land use policies.

Construction of the proposed development on Inclusion Area D would require relocating the existing farm plots and compost operations offsite to an area now designated as protected landscape by the LRDP. The LRDP describes land uses compatible with the protected landscape designation as those that would not impinge on the area's overall character or prevent the functioning of identified wildlife corridors. The designation also allows for agricultural research that maintains the visual quality of the surrounding area. Because the relocated farm plots and composting operations would be relatively small, would not disrupt known wildlife corridors, and would not be conspicuous from adjacent land uses, relocating them to an area designated as protected landscape would not conflict with the existing LRDP land use plan.

Conclusion: Minimal impacts are expected.

LPG Site

The LPG site is currently designated for site-specific research use, intended for the development of new buildings associated with site-specific research programs. The proposed equipment storage facility would be used to store equipment that is used at the Arboretum and the Farm, and would therefore be consistent with the existing land use designation.

Conclusion: No impacts are expected.

Conflicts with Adjacent Land Uses

The proposed development would require constructing a natural gas line through the Arboretum eucalyptus grove and improving a secondary access road, both of which are in areas now designated for site-specific research by the LRDP. This area is planned for uses related to Social Sciences, Natural Sciences, and Student Services. Consequently, gas line construction and road improvements could lead to temporary incompatibility with the existing land use designation during construction and future maintenance work on either of these facilities. However, any infringement would be temporary and would be restricted. There would be

no permanent introduction of incompatible land uses, so this is not considered an adverse effect.

Construction of the proposed development would result in the placement of new buildings adjacent to an area designated with a historic district overlay, the Cowell Ranch complex. Policies governing land use within the historic district are intended to protect the remaining historic Cowell Ranch buildings (University of California, Santa Cruz 1989). The Ranch View Terrace development would be visible from the historic district, and could be considered an incompatible land use. However, the design for the Ranch View Terrace development would be consistent with the character of the historic district, and the proposed landscaping and visual separation provided by rolling site topography would further reduce any sense of incompatibility. No adverse effects related to incompatibility with the Cowell Ranch Historic District are expected (see related discussion in Cultural Resources above).

Conclusion: Minimal impacts are expected.

Alternative 3 (Off-Campus Housing)

The Off-Campus Housing Alternative would be subject to City of Santa Cruz General Plan policies and zoning regulations. Project development would occur on an undeveloped site within an area designated for residential use, and therefore would result in similar effects as the Proposed Action related to consistency with land use designations. Unlike the Proposed Action, this alternative would require a coastal development permit. It is assumed that development would be sited and designed with the intent of conforming with General Plan and Coastal Act policies, but given the issues raised with respect to aesthetics, biological resources, and circulation, mitigation may be required to bring the development into conformance. Unlike the Proposed Action, the Off-Campus Housing Alternative would not be developed in an area subject to any existing or proposed Habitat Conservation Plans.

Conclusion: Minimal impacts are expected.

Alternative 4 (Reduced Project on Inclusion Area D Site)

The Reduced Project Alternative would be constructed in the same location as the Proposed Action, and therefore would result in the same minimal conflicts with relevant plans and policies and adjacent land uses.

Conclusion: Minimal impacts are expected.

Effects Related to Noise

Alternative 1 (No Action)

If the No Action alternative were implemented, no development would take place, and environmental conditions would not change. Therefore, there would not be project-related effects related to the introduction of new sources of noise in the project area.

Conclusion: No impacts are associated with this alternative.

Alternative 2 (Proposed Action)

Construction of the proposed development will result in a temporary, intermittent increase in the level of ambient noise in areas adjacent to the Inclusion Area D and the LPG construction sites. No construction will take place on Inclusion Area A, so Inclusion Area A will not be affected by construction noise.

Because Inclusion Area D and the LPG site are surrounded by an urbanized area that includes roadway networks, residential development, and university facilities, existing conditions in these areas include a steady level of ambient noise. Additional construction noise during phase 1 could be disruptive to nearby residential uses in particular. However, construction noise will be filtered by the grove of large eucalyptus trees that separates the project site from existing off-campus developments. Potential effects of construction noise on adjacent land uses will be further reduced through the implementation of measures discussed in Chapter 2 (*General Project Measures to Minimize Environmental Effects Noise).*

Phases 2 and 3 of the project likely would be constructed after housing in phase 1 is built and occupied. Construction of portions of the phase 2 and 3 development could occur within 50 feet or less of occupied homes in the phase 1 development. Jackhammers and pavers, the noisiest equipment associated with the project, produce noise levels of 75 to 80 dBA, even with the implementation of the required feasible noise reduction measures. For residents of the closest houses to the margin of the phase 2 and 3 development, construction thus would produce some substantial intermittent noise. Such activities would be most likely to cause disturbance at the occupied residences if they were to occur during weekday evenings and nights, or on weekends. The proposed project includes a stipulation that construction of phase 2 and 3 development would be restricted to weekdays during normal working hours. With the inclusion of this provision, the adverse noise impacts of Phase 2 and 3 development would be minimized.

Occupation of the proposed housing development will generate some noise associated with everyday resident use of the facilities. Noise sources would likely include lawn mowers, vehicles, conversation, music, etc. In addition, ongoing maintenance may include intermittent introduction of equipment associated with maintenance activities. Use of the ERC equipment storage facility could intermittently generate noise related to equipment storage and movement on and off of the site. Operation of the Inclusion Area A Preserve will

result only in noise associated with maintenance and vegetation management activities, which would not require the use of heavy equipment. Because the proposed activities are in accordance with adjacent land uses, and would not substantially increase the levels of ambient noise within or adjacent to the project area, the effects of project operation on ambient noise levels are expected to be minimal.

Conclusion: Adverse impacts would be minimized.

Alternative 3 (Off-Campus Housing)

The duration of construction would be reduced under the Off-Campus Housing Alternative because fewer units would be constructed than under the Proposed Action. This would result in reduced construction-related noise effects, although noise impacts during a single day of construction would be similar to those of the Proposed Action. Like the Proposed Action, occupancy of the proposed housing at the Swenson Site would generate some noise associated with everyday resident use of the facilities. Fewer trips would be generated by the alternative, and some of the traffic-generated noise (e.g., for people traveling from the residences to jobs off campus) would be shifted to different routes; based on the reduced number of trips, traffic noise generally would be lower than that resulting from the Proposed Action.

Conclusion: Adverse impacts would be minimized.

Alternative 4 (Reduced Project on Inclusion Area D Site)

Implementation of the Reduced Project Alternative would not substantially reduce construction noise impacts by comparison with the preferred alternative, because earthmoving and other noisy construction activities would still be undertaken in close proximity to existing college facilities, and would likely exceed applicable noise standards. However, the duration of construction would be reduced under this alternative because fewer units would be constructed than under the Proposed Action. This would result in reduced construction-related noise effects, although noise impacts during a day of construction would be similar to those of the Proposed Action. Fewer residents would occupy the development under this alternative, and therefore, noise levels associated with traffic and other noise sources would be lower than those resulting from the Proposed Action.

Conclusion: Adverse impacts would be minimized.

Effects Related to Population Growth and Housing

Alternative 1 (No Action)

If the No Action Alternative were implemented, UCSC would not be able to construct the proposed Ranch View Terrace development, and would be less able to support the stated campus goal of housing 25 percent of faculty members and 50 percent of new staff recruited from outside the City and County of Santa Cruz on campus (see University of California, Santa Cruz 1989). As the campus continues to grow, inability to place new faculty and staff in on-campus housing facilities would increase demand for housing and other related resources in the City and County of Santa Cruz at large. Enrollments are expected to increase to 15,000 by 2005; consequently, the need for additional faculty and staff will continue to increase over time. If the campus does not provide additional on-campus housing and services for the growing population of faculty and staff, they would be forced to seek housing off campus, resulting in potential adverse effects on the off-campus housing markets, and placing additional demands on off-campus service providers.

Conclusion: A negative impact is expected but this impact is not significant.

Alternative 2 (Proposed Action)

Construction of the proposed Ranch View Terrace development on Inclusion Area D is intended to support the planned growth of UCSC to an enrollment of 15,000 students by the year 2005 by providing additional faculty and staff housing. Proposed activities at Inclusion Area A and the LPG site would not affect population and housing on the campus. Although the preserve at Inclusion Area A would reduce the area of developable land within the inclusion area, much of Inclusion Area A would remain available for development, and other areas throughout campus would continue to offer adequate open space to support future development.

UCSC seeks to minimize its population and growth effects on the surrounding City and County of Santa Cruz by housing the majority of its faculty, staff, and students on campus, and has already constructed several on-campus housing facilities in support of this goal, including the Village and Colleges 9 and 10. Providing additional faculty and staff housing on the campus would support planned campus growth, and is expected to have an overall beneficial effect on the area's constricted housing market because it would reduce faculty and staff demand for off-campus housing.

Conclusion: A beneficial impact, though not significant, is expected.

Alternative 3 (Off-Campus Housing)

The Off-Campus Housing Alternative would provide approximately half the amount of housing units as the Proposed Action at an off-campus location. This would reduce UCSC's ability to meet its goal of supporting 25 percent of faculty members and 50 percent of new staff on campus. It would also affect UCSC's need to minimize its population and growth effects on the surrounding City and County by housing the majority of its faculty, staff, and students on the campus. This could have potential adverse effects on the off-campus housing market and could place additional demands on off-campus service providers.

Conclusion: A negative impact, though not significant, is expected.

Alternative 4 (Reduced Project on Inclusion Area D Site)

The on-campus housing-related population increase generated by the Reduced Project Alternative would be less than that of the Proposed Action. As such, this alternative would be less beneficial than the Proposed Action to the area's constricted housing market because it would not provide as many on-campus units as the Proposed Action. In addition to potential adverse effects on the off-campus housing market, this could place additional demands on off-campus service providers. This alternative would also reduce UCSC's ability to meet its goal of supporting 25 percent of faculty members and 50 percent of new staff on campus. If the LRDP's on-campus housing goals are to be met, providing fewer housing units in Inclusion Area D would require the provision of more units in additional undeveloped parts of the campus, and construction and occupation of these units would result in additional incremental impacts.

Conclusion: A negative impact, though not significant, is expected.

Public Health Hazards

No existing public health hazards have been identified in the proposed project area, and none are expected to result from project implementation. There would be no project-related effect in this area under any of the alternatives.

Conclusion: No impacts are expected.

Public Services and Utilities

Alternative 1 (No Action)

Potential Increase in Demand for Fire and Police Protection Services

Even if the No Action Alternative were implemented, the planned growth in the campus community would likely continue as enrollments increase toward the planned 2005 goal of 15,000. However, growth would have to be accommodated by off-campus housing within the City and County, and the resulting increases in population within the City and/or County could lead to further increased demand for City/County fire and police protection regardless of whether housing is constructed on campus or not.

Conclusion: No impacts are expected with this alternative.

Increased Demand for Schools and Parks and Recreation

As described above, the campus community is expected to continue to grow even if the No Action Alternative is implemented. Because the proposed development would not provide schools, effects on demand for local schools would be the same under the No Action Alternative as those described above for the Proposed Action. Similarly, anticipated growth in the campus community is not expected to result in a demand for recreational resources beyond that which can be accommodated through existing parks and open space, even if the No Action Alternative is selected and the Ranch View Terrace development is not constructed.

Conclusion: No impact is expected.

Increased Demand for Utilities

Even if the No Action Alternative were implemented, the planned growth in the faculty and staff community would likely continue as enrollments increase. However, in the immediate future, university employees would need to seek housing off campus in the City and County of Santa Cruz. Over time, if no additional housing is provided elsewhere on campus, university growth would likely lead to increased demand for utilities and other services off campus. Depending on economic and population trends in surrounding areas, this could represent an adverse effect.

Conclusion: A negative indirect impact, though not significant, is expected.

Alternative 2 (Proposed Action)

Potential Increase in Demand for Fire and Police Protection Services

Implementation of the Proposed Action would allow construction of the Ranch View Terrace housing development, resulting in demand for additional fire and police protection. The MMP for the LRDP EIR (University of California, Santa Cruz 1988) contains specific guidelines for effective management of increased demand for these services, including expanding existing services and hiring additional fire and police officers to effectively serve the increased demand generated by new development. Because measures have been established that include the proposed growth, and UCSC would be required to comply with these measures under the terms of mitigation identified in the LRDP EIR (University of California, Santa Cruz 1988), no adverse effects are anticipated under the Proposed Action.

Conclusion: Impacts would be minimized by expanded services requirement.

Increased Demand for Schools

As the campus community grows, the number of children of school age in the community can be expected to increase. The LRDP EIR (University of California, Santa Cruz 1988) indicates that approximately 77 percent of UCSC-related children of school age would attend Santa Cruz City schools and approximately 23 percent of these children would attend schools in other outlying districts, assuming buildout as projected in the LRDP. Consequently, enrollment in City schools would increase with growth in the campus community. However, the proposed Ranch View Terrace development is expected to house a total of only 200–250 people, including children. This would represent a small increase in the number of school-aged children, and the existing enrollment of local schools is currently below capacity, so the effect of the proposed development on local schools is expected to be minimal.

Conclusion: Minimal impacts are expected.

Increased Demand for Parks and Recreation

Implementation of the Proposed Action would result in the preservation of grassland habitats in Inclusion Areas A and D. These areas are currently open to the public and are used for recreational purposes, including nature viewing, walking, jogging, and hiking, and would continue to be available to the public after project implementation. Other portions of the campus also support a substantial extent of open space, and numerous City and County parks in the surrounding area offer bike trails, hiking, nature viewing and other recreational opportunities. The proposed new development would provide common open space within the 6.6 acres of landscaped grounds, including a neighborhood park that includes shared amenities such as picnic facilities, playgrounds, and

community gardens. The project would also include bicycle and pedestrian connections to existing recreation routes located adjacent to the proposed development. Because of the small number of additional users expected to result from the proposed development and the recreational amenities that would be provided to residents, reducing their need for outside recreational facilities, the overall effect on recreational opportunities in the project area is expected to be minimal.

Conclusion: Minimal impacts are expected.

Increased Demand for Utilities

Construction of the proposed housing development would result in increased demand for various utilities services on campus, including water supply, wastewater or sewage service, solid waste disposal, gas and electric services, and telephone services.

The proposed development would include construction of the following components.

- A utility corridor extending south from the existing primary access road (at the southern boundary of the Ranch View Terrace site) to the edge of Inclusion Area D, where it would tie into existing utility lines.
- A new utility line that ties into existing water and sewage lines.
- A storm drain that discharges into the City of Santa Cruz's Arroyo Seco storm drain.
- A gas line through the Arboretum Eucalyptus Grove, connecting to existing PG&E line at the campus perimeter.

As described in Chapter 3 (*Affected Environment*), UCSC obtains its water supply from the SCWD. A recent analysis prepared by the City of Santa Cruz demonstrated that the SCWD water production system has been inadequate to meet average annual demand in recent years; the City water system relies heavily on surface water sources, and the primary water problem in the SCWD's service area is inadequate supply during low-rainfall years. Accordingly, the City is considering the development of several alternate sources of water supply.

The City is under contractual obligation to provide sufficient water to serve planned UCSC growth. However, UCSC has an aggressive water conservation program, and total UCSC water use was estimated as only 4.9 percent of the SCWD's total demand in 2000, even with campus growth (University of California, Santa Cruz 1999). Consequently, the City supply is expected to continue to adequately support UCSC usage, even with construction of the proposed new development, and no adverse effect on water supply is expected.

The UCSC campus is served by the Santa Cruz Wastewater Treatment Plant, which is presently operating at slightly less than 60 percent of its capacity (City of Santa Cruz 2003). Although the campus has grown substantially over the past decade, UCSC's wastewater generation has decreased as a result of water

conservation efforts in place since 1987. As a result, the SCWTP is expected to be able to accommodate additional wastewater generated by the proposed development for the foreseeable future.

UCSC has reduced its solid waste generation rates through recycling and composting efforts implemented via the LRDP planning process, and solid waste generation is not expected to increase substantially as a result of the proposed development. The City of Santa Cruz Landfill has adequate capacity to serve the City and the UCSC campus through 2038.

Other utility services, such as gas, electricity, and telephone service, are also expected to be adequate to support the proposed development, as the projected increase in population with construction of the Ranch View Terrace development would be comparatively small, and proposed changes on the LPG site and Inclusion Area A are not expected to affect gas, electricity, or telephone service needs.

Conclusion: Minimal impacts are expected.

Alternative 3 (Off-Campus Housing)

Like the Proposed Action, the Off-Campus Housing Alternative would result in demand for additional fire and police protection, as well as increased enrollment in local City schools. However, this alternative would have approximately half the amount of housing units as the Proposed Action, and the minimally adverse effects on fire, police, and public schools associated with the Proposed Action would be reduced further. Like the Proposed Action, the Off-Campus Housing Alternative would provide a park and playground area. Additionally, City development restrictions for the Swenson Site would require the proposed development to be clustered to allow for open space. Therefore, the small number of additional users of existing parks and the recreational amenities that would be provided onsite would reduce this alternative's overall effect on parks and recreation in the area. The Off-Campus Housing Alternative would have similar, and slightly reduced, effects on utility services as the Proposed Action. The Off-Campus Housing Alternative would result in an approximately 54 percent reduction in solid waste generation, wastewater generation, energy use, and potable water use compared to that of the Proposed Action (UCSC 2004a). The amount of water used for landscape irrigation at individual units would be lower; the amount of water used for irrigation of common areas and active open spaces could be similar, depending on how much open space is included.

Conclusion: Minimal impacts are expected.

Alternative 4 (Reduced Project on Inclusion Area D Site)

Like the Proposed Action, the Reduced Project Alternative would result in demand for additional fire and police protection, as well as increased enrollment

in local City schools. However, this alternative would have approximately half the amount of housing units as the Proposed Action, and the minimally adverse effects on fire, police, and public schools associated with the Proposed Action would be reduced further. The Reduced Project Alternative would result in an approximately 45 percent reduction in solid waste generation, wastewater generation, energy use, and potable water use compared to that of the project (UCSC 2004b). The amount of water used for landscape irrigation at individual units would be lower; the amount of water used for irrigation of common areas and active open spaces could be similar, depending on how much open space is included.

Conclusion: Minimal impacts are expected.

Transportation and Traffic

Alternative 1 (No Action)

Under the No Action Alternative, campus-related growth would continue to occur, but would not be accommodated by on-campus housing. Additional faculty and staff would live off campus and commute, potentially increasing traffic volumes on roadways leading to UCSC and contributing to increased traffic congestion during peak morning and evening commute hours as the university community grows. This effect is considered adverse.

Similarly, the No Action Alternative could result in increased demand for on-campus parking. On-campus housing is intended in part to limit the number of commuters requiring parking spaces. If adequate housing is not provided on campus, the growing university population housed off-campus would continue to increase the demand for on-campus parking, overloading existing parking facilities or necessitating the construction of additional parking. This would represent an adverse effect.

Conclusion: Adverse impacts, though not significant, are expected.

Alternative 2 (Proposed Action)

The following evaluation of potential adverse effects related to transportation and traffic is qualitative and was based on general traffic conditions described in Chapter 3 (*Affected Environment*).

Potential for Increased Traffic Congestion

Implementation of the Proposed Action is intended to allow the campus to accommodate approximately 200–250 additional faculty and staff and their families on the campus. Providing on-campus housing would allow existing and future university employees to live on campus, reducing potential commute trips to and from campus. In addition, the Ranch View Terrace site would be

supported by City of Santa Cruz and UCSC public transportation, which would provide service within the campus and to local off-campus amenities. This would reduce the need for vehicle trips to the Campus Core and to off-campus destinations in the City and County. Because the proposed development would be located adjacent to the main campus entrance and new roadways would provide access to the development, traffic increases within the campus are expected to be minimal. In summary, the project is expected to result in a minor to moderate change in traffic throughout campus, and the effect on local traffic congestion is expected to be minimal.

Conclusion: Adverse impacts, though not significant, are expected.

Effects on Availability of Parking

The proposed housing development would provide parking spaces for each unit built on the site. In addition, as described above, City of Santa Cruz and UCSC public transportation would serve the development, and the site would be connected to existing bicycle and pedestrian walkways. These amenities would encourage residents to use other forms of transportation, such as bicycles, walking, or campus and City transit to travel around the campus and throughout the neighboring community of Santa Cruz. Because parking would be provided on site (over 200 parking spaces) and residents would be encouraged to use alternative modes of transportation around campus, the proposed development is expected to have a minimal effect on parking demand elsewhere on campus, and may even decrease the need for parking within the Campus Core.

Conclusion: A beneficial impact, though not significant, is expected.

Alternative 3 (Off-Campus Housing)

The Off-Campus Housing Alternative would result in a 54 percent reduction in the number of daily and peak-hour trips compared to the Proposed Action (UCSC 2004b). Faculty and staff residents at the Swenson Site would travel from the site to the UCSC campus, while other residents would travel from the site to jobs elsewhere. Some roadways near the campus would experience a lower level of traffic compared to the Proposed Action; other roadways would have higher levels of traffic. Similar to the Proposed Action, the impacts on traffic congestion on roadways near the campus would be minimal. A previous analysis of cumulative levels of service for intersections near the Swenson Site (prepared for a different project), assuming that the site would be developed with 80 units, indicated that all intersections in the area except State Route 1/Bay Street would operate at acceptable levels (UCSC 2004b).

Conclusion: Minimal impacts are expected.

Alternative 4 (Reduced Project on Inclusion Area D Site)

Due to the reduced number of residential units, the Reduced Project Alternative would result in fewer adverse traffic and congestion effects than the Proposed Action. The Reduced Project Alternative would result in a 44 percent reduction in the number of daily and peak-hour trips (UCSC 2004b).- This alternative would also have a minimal effect on parking demands on campus, and may further decrease the need for parking within the Campus Core.

Conclusion: Minimal impacts are expected.

Unavoidable Adverse Impacts

Implementation of the Proposed Action (issuance of an incidental take permit and implementation of the Ranch View Terrace HCP, allowing the proposed development to take place) would not result in any unavoidable adverse impacts on the physical, biological, or social and economic environment.

Irreversible and Irretrievable Commitments of Resources

Proposed Action

Construction of the proposed Ranch View Terrace housing development and LPG site equipment storage facility would require a one-time irretrievable commitment of resources in the form of construction materials such as wood and wood byproducts (renewable), plastics (nonrenewable), metals (nonrenewable), and mineral products such as concrete and plaster (nonrenewable). It would also require an irretrievable commitment of nonrenewable petroleum resources to support operation of heavy equipment, and electricity to power hand tools and provide lighting for interior finish work.

Occupation of the proposed development would require a further commitment of wood, petroleum, metals, and other resources needed for the production of furnishings. Electrical power would also be consumed as a result of project occupancy. Landscaping maintenance could require additional small, ongoing commitments of electricity, fuels and lubricants, and water.

The campus is expected to continue to grow even if the No Action Alternative is implemented. Increased pressure on the off-campus housing market could result in increased utilization of various resources, including energy resources, as campus growth increases populations in nearby communities. Adverse effects could result from the insufficiency of existing services and amenities provided by the adjacent communities, including utilities, housing stock, and road infrastructure. However, this would not result in irreversible or irretrievable

commitments of resources, unless housing pressures related to campus growth support additional housing or infrastructure construction in off-campus communities.

Short-Term Uses versus Long-Term Productivity

The proposed project is intended to provide long-term management for the CRLF and OTB through an increased level of protection of lands that presently support these species, or could support them in the future if appropriately managed. Short-term uses related to construction activities are not expected to result in major adverse effects on these species, and best management practices and mitigation measures implemented during construction (see above and Chapter 2) would further reduce these potential effects. Long-term productivity of the species would be increased though habitat preservation, management, and enhancement. The long-term loss of grassland habitat that would result from project implementation would affect only low quality habitat that is marginally useful to the Plan Species and is relatively unimportant in the context of potential habitat in the surrounding area.

Cumulative Effects

This section presents an analysis of the cumulative effects that may occur as a result of the combined effects of implementing the Proposed Action and other reasonably foreseeable projects on similar construction schedules throughout the UCSC campus. Other campus projects include the construction of a Humanities and Social Sciences complex, Physical Sciences Building, and Engineering Building, and expansion of the McHenry Library. Only those resources that may be affected by cumulative effects through campus build-out are discussed in this section.

Because the project has incorporated a variety of construction, design, and operational mitigation measures to reduce effects on the environment and resources throughout the UCSC campus, and on adjacent lands and infrastructure, and is located away from other proposed construction projects on the campus, the project is not expected to significantly contribute to adverse cumulative effects on any resources. However, the continued growth of the UCSC campus population, in combination with the growth of local jurisdictions, will continue incrementally to contribute to traffic congestion and roadway deterioration in neighboring communities, and throughout campus. Therefore, overall circulation planning and mitigation measures will be required in the future in order to meet on-going roadway demand, both within the UCSC campus and throughout the neighboring communities.

Cumulative Effects on Plan Species

Implementation of the HCP is expected to result in a net benefit to the OTB, but in a slight decrease of available upland habitat for the CRLF that is offset by the proposed mitigation.

California red-legged frog will benefit from the permanent protection and management of 13 acres of high quality forest and upland grassland habitat in Inclusion Area A. There will be a net loss of 7.5 acres of marginal upland habitat from construction of Ranch View Terrace. Because of its poor quality and the abundance of better quality upland habitat on campus, the loss of 7.5 acres of this habitat is not expected to harm the population of the species on campus or contribute to an adverse cumulative effect on the species in Santa Cruz County.

Based on the best available information, the Ranch View Terrace site on Inclusion Area D does not contain a soil types known to support OTB, so no beetle habitat will be lost. The HCP will benefit OTB with the permanent protection of the Inclusion Area A Preserve and a portion of a known population of beetles. During the life of the incidental take permit, the UC Regents will also increase the amount of suitable habitat for beetles by preserving, enhancing, and managing upland grassland habitat on the Inclusion Area D Preserve. After the conservation strategy has been implemented, approximately 23.5 acres of upland grassland habitat will be preserved (11 in the Inclusion Area A Preserve and 12.5 in the Inclusion Area D Preserve) and 2 acres of riparian woodland will be preserved (in the Inclusion Area A Preserve). Of the grassland area, approximately 0.1 acre of habitat is currently occupied by OTB, and up to 5.7 acres of habitat will be enhanced to support the species.

Conclusion: No cumulative impacts are expected.

Table 4-1. Comparison of Impacts of Alternatives (after Mitigation)

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – Off-Campus Housing	Alternative 4 – Reduced Project
California red-legged frog	Existing biological conditions would remain the same, and there would be no additional effects on CRLF.	Minimal construction-related and long-term adverse effects related to habitat loss and mortality (roadkill and predation).	Potentially greater adverse effects than Proposed Action because of known use of site by CRLF and proximity to sensitive hydrologic features.	Less construction-related and long-term minimal effects than Proposed Action due to smaller development.
Ohlone tiger beetle	Existing biological conditions would remain the same, and there would be no additional effects on OTB.	Minimal construction-related adverse effects and beneficial long-term effects due to habitat enhancement.	Greater adverse effects than Proposed Action because of removal of unoccupied but suitable habitat.	Less construction-related less and long-term minimal effects than Proposed Action due to smaller development.
Other biology	Existing biological conditions would remain the same, and there would be no additional effects.	Minimal construction-related and minimal long-term adverse effects.	Less potentially adverse effects than Proposed Action because of smaller development footprint and setbacks.	Less construction-related less and long-term minimal effects than Proposed Action due to smaller development.
Visual resources	Existing visual environment would remain the same, and there would be no additional effects.	No adverse effects on visual character or light and glare.	Potentially adverse effects on visual resources and views; no adverse effects on light and glare.	No adverse effects on visual character or light and glare.
Air quality	Existing air quality conditions and criteria pollutant levels would remain the same, and there would be no additional effects.	Minimal short- and long-term adverse effects to air quality.	Reduced minimal short- and long-term adverse effects to air quality due to fewer trips from smaller development.	Reduced minimal short- and long-term adverse effects to air quality due to fewer trips from smaller development.
Hydrology and water quality	Existing drainage, groundwater, and water quality conditions would remain the same, and there would be no additional effects.	Minimal adverse effects on groundwater, erosion, stormwater drainage, or water quality.	Potential for greater adverse hydrologic effects than Proposed Action due to proximity to Antonelli Pond and Moore Creek.	Reduced adverse effects on groundwater, erosion, stormwater drainage, or water quality compared to Proposed Action due to smaller development.

Table 4-1. Continued

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – Off-Campus Housing	Alternative 4 – Reduced Project
Cultural resources	Existing conditions would remain the same, and there would be no additional effects.	Minimal or no adverse effects on buried cultural resources; no adverse effect on the Cowell Ranch Historic District.	Minimal or no adverse effects on buried cultural resources; no adverse effect on historic resources.	Minimal or no adverse effects on buried cultural resources; no adverse effect on the Cowell Ranch Historic District.
Land use	Existing land uses would remain the same, and there would be no additional effects.	Minimal adverse effects on existing land uses; no adverse effects on adjacent land uses.	Similar minimal adverse effects on existing land uses as Proposed Action; no adverse effects on adjacent land uses.	Similar minimal adverse effects on existing land uses as Proposed Action; no adverse effects on adjacent land uses.
Noise	Existing noise levels would remain the same, and there would be no additional effects.	Minimal short- and long-term adverse noise effects.	Less minimal short- and long-term adverse noise effects than Proposed Action due to smaller development.	Reduced short- and long-term adverse noise effects compared to Proposed Action due to smaller development.
Population growth and housing	Potential adverse effects to off-campus housing markets and off-campus service providers, as well as to implementation of UCSC LRDP on-campus housing goals.	Beneficial effect on off-campus housing markets.	Similar to No Action, potential adverse effects to off-campus housing markets and off-campus service providers, as well as to implementation of UCSC LRDP on-campus housing goals.	Potential adverse effects to off-campus housing markets and off-campus service providers, as well as to implementation of UCSC LRDP on-campus housing goals; however, this alternative would have reduced adverse effects compared to No Action or Off-Site Housing Alt.
Transportation and Traffic	Adverse effect on roadways leading to UCSC and on-campus parking due to an increase of off-campus commuters.	Minimal effect on local and on-campus traffic congestion and minimal effect on on-campus parking demand.	Reduced effect on local and on-campus traffic congestion and reduced effect on on-campus parking demand compared to Proposed Action due to fewer trips from smaller development.	Reduced effect on local and on-campus traffic congestion and minimal effect on on-campus parking demand compared to Proposed Action due to fewer trips from smaller development.

Chapter 5

Coordination, Consultation, and Compliance

Agency Coordination and Public Involvement

The Service has coordinated closely with planning staff at UCSC (representatives of the Regents) in the preparation of this EA. UCSC planning staff are currently in the process of preparing an environmental impact report for the proposed Ranch View Terrace development, as required by the California Environmental Quality Act (CEQA). As part of this CEQA process, the Regents held a public scoping meeting on May 14, 2003 in order to get public input on the proposed project. The information that was obtained at this meeting was included, as applicable, into the project description for the Ranch View Terrace Development Project, and has been analyzed in the EA.

The UCSC planning staff and legal staff at the University of California Office of the President (UCOP) have served as representatives of the UC Regents during the development of the HCP. These representatives have coordinated closely with Service staff in the Ventura, California office and the Portland, Oregon regional office during development of the HCP. UCSC planning staff, UCOP legal staff, and their consultants met or held conference calls with Service staff Colleen Sculley (HCP Coordinator, Ventura), Amelia Orton-Palmer (Chief, Division of Santa Cruz and San Benito Counties, Ventura), Rick Amidon (HCP Coordinator, Portland), Debra Kirkland (Fish and Wildlife Biologist, Ventura), Connie Rutherford (Botanist, Ventura), Diane Gunderson (Fish and Wildlife Biologist, Ventura), Jen Lechuga (HCP Coordinator, Ventura), Karen Koch (Solicitor, Department of the Interior, Sacramento), Diane Steeck (Fish and Wildlife Biologist, Ventura), Julie Concannon (NEPA Coordinator, Portland) and David Pereksta (Chief, Division of Santa Cruz and San Benito Counties, Ventura) on the following dates:

- November 7, 2001 (Sculley, Kirkland),
- January 9, 2002 (Sculley),
- February 11, 2002 (Sculley),
- March 18, 2002 (Sculley, Orton-Palmer),
- March 26, 2002 (Sculley, Kirkland),
- May 8, 2002 (Sculley, Orton-Palmer, Amidon),
- August 19, 2002 (Rutherford),

- September 18, 2002 (Orton-Palmer, Rutherford),
- October 22, 2002 (Orton-Palmer),
- November 20, 2002 (Orton-Palmer),
- June 10, 2003 (Orton-Palmer),
- June 11, 2003 (Orton-Palmer, Gunderson),
- July 1, 2003 (Orton-Palmer, Gunderson),
- September 23, 2003 (Amidon),
- September 26, 2003 (Gunderson, Lechuga),
- October 8, 2003 (Gunderson, Lechuga, Koch),
- January 12, 2004 (Lechuga, Steeck),
- February 18, 2004 (Pereksta),
- April 27, 2004 (Lechuga, Concannon, Amidon, Pereksta),
- May 3, 2004 (Lechuga, Amidon, Koch), and
- May 26, 2004 (Lechuga).
- July 1, 2004 (Lechuga).

This EA and the Draft Ranch View Terrace HCP (Jones & Stokes 2004) are being distributed to government agencies, local jurisdictions, community groups, and interested citizens, as required by NEPA. The Service will receive public comments on these documents and will consider these comments in proceeding with the environmental review process for the Proposed Action.

Compliance with Other Environmental Regulations

This EA is intended to comply with the National Environmental Policy Act of 1970, as amended. In undertaking the Proposed Action, the Service will also comply with the following Federal laws, executive orders, and legislative acts.

- Conservation of Migratory Birds (Executive Order 13186).
- Intergovernmental Review of Federal Programs (Executive Order 12372).
- Protection of Historical, Archeological, and Scientific Properties (Executive Order 11593).
- Endangered Species Act of 1973, as amended.
- National Historic Preservation Act of 1966, as amended.

Distribution and Availability

This EA and the Draft Ranch View Terrace HCP (Jones & Stokes 2004) are on file and available at the U.S. Fish and Wildlife Service Ventura Field Office at 2493 Portola Road, Suite B, Ventura, CA 93003. To receive a copy of these documents, please contact

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Chapter 6
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