

## 3.5 BIOLOGICAL RESOURCES

This section addresses biological resources known or with potential to occur in or near the LRDP area and describes potential effects of implementation of the 2021 LRDP on those resources. Biological resources include vegetation and habitat types, special-status plant and animal species, and otherwise sensitive plant communities. Data reviewed in preparation of the analysis include existing literature and data sources; publicly available databases maintained by the California Department of Fish and Game (CDFW), California Native Plant Society (CNPS), and U.S. Fish and Wildlife Service (USFWS); and recent biological resource surveys and assessments conducted on campus. In response to the NOP for the 2021 LRDP EIR, comment letters (see Appendix B) were received from CDFW, USFWS, the California Department of Forestry and Fire Protection, the League of Women Voters of Santa Cruz County, the Santa Cruz City-County Task Force to Address UCSC Growth Plans, the Coalition for Limiting University Expansion, the County of Santa Cruz, the City of Santa Cruz, the East Meadow Action Committee, Habitat and Watershed Caretakers, and many individual citizens regarding endangered and threatened wildlife and plant species, other special-status wildlife and plant species, cave organisms, sensitive habitats, sensitive natural communities, Campus Natural Reserve lands, the Great Meadow, wildlife movement corridors, sudden oak death, invasive species, the Ranch View Terrace Habitat Conservation Plan (HCP), and development of a comprehensive HCP. These issues are considered and addressed below, where applicable. Refer to Appendix B for comments received on the NOP.

### 3.5.1 Regulatory Setting

#### FEDERAL

##### Federal Endangered Species Act

Pursuant to the federal ESA (16 U.S.C. Section 1531 et seq.), USFWS regulates the taking of species listed in ESA as threatened or endangered. In general, persons subject to ESA (including private parties) are prohibited from “taking” endangered or threatened fish and wildlife species on private or government-owned property, and from “taking” endangered or threatened plants in areas under federal jurisdiction or in violation of state law. Under Section 9 of the ESA, the definition of “take” is to “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” USFWS has also interpreted the definition of “harm” to include significant habitat modification that could result in take.

Section 10 of ESA applies if a non-federal agency is the lead agency for an action that results in take and no other federal agencies are involved in permitting the action. Section 7 of ESA applies if a federal discretionary action is required (e.g., a federal agency must issue a permit), in which case the involved federal agency consults with USFWS.

##### Clean Water Act

Section 404 of the Clean Water Act (CWA) requires project applicants to obtain a permit from U.S. Army Corps of Engineers (USACE) before performing any activity that involves any discharge of dredged or fill material into waters of the United States, including wetlands. Waters of the United States include navigable waters of the United States, interstate waters, tidally influenced waters, and all other waters where the use, degradation, or destruction of the waters could affect interstate or foreign commerce, tributaries to any of these waters, and wetlands that meet any of these criteria or that are adjacent to any of these waters or their tributaries. Many surface waters and wetlands in California meet the criteria for waters of the United States.

In accordance with Section 401 of the CWA, projects that apply for a USACE permit for discharge of dredged or fill material must obtain water quality certification from the appropriate regional water quality control board (RWQCB) indicating that the action would uphold state water quality standards.

## **Migratory Bird Treaty Act**

The Migratory Bird Treaty Act (MBTA), first enacted in 1918, provides for protection of international migratory birds and authorizes the Secretary of the Interior to regulate the taking of migratory birds. The MBTA provides that it is unlawful, except as permitted by regulations, to pursue, take, or kill any migratory bird, or any part, nest, or egg of any such bird. Under the MBTA, "take" is defined as "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or any attempt to carry out these activities." A take does not include habitat destruction or alteration, if there is not a direct taking of birds, nests, eggs, or parts thereof. The current list of species protected by the MBTA can be found in Title 50 of the Code of Federal Regulations (CFR), Section 10.13 (50 CFR 10.13). The list includes nearly all birds that are native to the United States.

## **Bald and Golden Eagle Protection Act**

The Bald and Golden Eagle Protection Act, enacted in 1940 and amended multiple times since, prohibits the taking of bald and golden eagles without a permit from the Secretary of the Interior. Similar to the ESA, the Bald and Golden Eagle Protection Act defines "take" to include "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb" (16 U.S. Code 668–668c). For the purpose of the act, disturbance that would injure an eagle, decrease productivity, or cause nest abandonment, including habitat alterations that could have these results, are considered take and can result in civil or criminal penalties.

## **STATE**

### **California Endangered Species Act**

Pursuant to the California Endangered Species Act (CESA), a permit from CDFW is required for projects that could result in the "take" of a plant or animal species that is listed by the state as threatened or endangered. Under CESA, "take" is defined as an activity that would directly or indirectly kill an individual of a species, but the CESA definition of take does not include "harm" or "harass," like the ESA definition does. As a result, the threshold for take is greater under CESA than under ESA. Authorization for take of state-listed species can be obtained through a California Fish and Game Code Section 2081 incidental take permit.

### **Native Plant Protection Act**

The Native Plant Protection Act (NPPA) (California Fish and Game Code Section 1900 et seq.) allows the California Fish and Game Commission to designate plants as rare or endangered. Sixty-four species, subspecies, and varieties of plants are protected as rare under the NPPA. The act prohibits take of endangered or rare native plants but includes exceptions for agricultural and nursery operations; for emergencies; and, after proper notification of CDFW, for vegetation removal from canals, roads, and other building sites, changes in land use, and other situations.

### **California Fish and Game Code Sections 3503 and 3503.5**

Section 3503 of the Fish and Game Code states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. Section 3503.5 of the California Fish and Game Code states that it is unlawful to take, possess, or destroy any raptors (i.e., species in the orders *Falconiformes* and *Strigiformes*), including their nests or eggs. Typical violations include destruction of active nests as a result of tree removal or disturbance caused by project construction or other activities that cause the adults to abandon the nest, resulting in loss of eggs or young.

### **Fully Protected Species**

Sections 3511, 4700, 5050, and 5515 of the California Fish and Game Code prohibit take of fully protected birds, mammals, reptiles and amphibians, and fish. Species listed under these statutes may not be taken or possessed at any time and no incidental take permits can be issued for these species except for scientific research purposes, for relocation to protect livestock, or as part of a Natural Community Conservation Plan (NCCP).

## California Fish and Game Code Section 1602—Streambed Alteration

All diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake in California that supports fish or wildlife resources are subject to regulation by CDFW under Section 1602 of the California Fish and Game Code. Under Section 1602, it is unlawful for any person, governmental agency, or public utility to do any of the following without first notifying CDFW:

- ▶ substantially divert or obstruct the natural flow of, or substantially change or use any material from, the bed, channel, or bank of any river, stream, or lake; or
- ▶ deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

The regulatory definition of a stream is a body of water that flows at least periodically or intermittently through a bed or channel that has banks and supports fish or other aquatic life. This definition includes watercourses with a surface or subsurface flow that supports or has supported riparian vegetation (California Code of Regulations Title 14, Section 1.72). CDFW jurisdiction within altered or artificial waterways is based on the value of those waterways to fish and wildlife. A streambed alteration agreement must be obtained for any diversion or alteration that would substantially adversely affect a fish or wildlife resource in a river, stream, or lake.

## Porter-Cologne Water Quality Control Act

Under the Porter-Cologne Act, waters of the state fall under the jurisdiction of the appropriate RWQCB. The LRDP area is within the Central California RWQCB. The RWQCB must prepare and periodically update water quality control plans (basin plans). Each basin plan sets forth water quality standards for surface water and groundwater, as well as actions to control point and nonpoint sources of pollution to achieve and maintain these standards. The RWQCB's jurisdiction includes federally protected waters as well as areas that meet the definition of "waters of the state." Waters of the state are defined as any surface water or groundwater, including saline waters, within the boundaries of the state. In addition to water quality certifications under Section 401 of the federal CWA, discharges to waters of the state, including wetlands, must meet the RWQCB waste discharge requirements. This issue is addressed comprehensively in Section 3.10, "Hydrology and Water Quality," as well as herein with respect to biological resources.

## California Coastal Act

The California Coastal Act (CCA), administered by the California Coastal Commission (CCC), includes policies for development proposed within the coastal zone and recognizes California ports, harbors, and coastline beaches as important coastal-dependent uses and resources. CCC regulates all jurisdictional wetlands that are under the joint jurisdiction of USACE and the RWQCBs, as well as riparian habitat under the jurisdiction of CDFW. The CCA also defines "Environmentally Sensitive [Habitat] Area" (ESHA) as "any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments" (Section 30107.5). The CCA requires that such areas be protected and that development projects within or adjacent to such areas be limited only to uses dependent on the ESHA resources and planned and sited to prevent significant disruption or degradation of habitat value. The California Coastal Zone is defined as land and water area of the State of California from the Oregon border to the border of the Republic of Mexico, extending seaward to the state's outer limit of jurisdiction, including all offshore islands, and extending inland generally 1,000 yards from the mean high tide line of the sea, but it is specifically designated on maps held by the legislature. In significant coastal estuarine habitat and recreational areas, it extends inland to the first major ridgeline paralleling the sea or 5 miles from the mean high tide line of the sea, whichever is less, and in developed urban areas, the zone generally extends inland less than 1,000 yards.

Portions of the LRDP area, including the Westside Research Park and the area west of Empire Grade within the Main Residential Campus, fall within the coastal zone. As described in Section 3.11, "Land Use and Planning," although campus lands are not included in any Local Coastal Program (LCP), UC Santa Cruz must comply independently with the requirements of the CCA.

## UNIVERSITY OF CALIFORNIA

### Ranch View Terrace Habitat Conservation Plan

The Ranch View Terrace HCP was developed by the UC Regents to seek regulatory compliance for the construction and operations of the Ranch View Terrace project and a new Emergency Response Center and was approved in 2005 (UC Santa Cruz 2005b). The HCP area includes approximately 38.8 acres in the lower campus portion of the LRDP area (Figure 3.5-1). This HCP covers two federally listed species: California red-legged frog (*Rana draytonii*) and Ohlone tiger beetle (*Cicindela ohlone*). Two preserves were established as mitigation areas to maintain habitat for Ohlone tiger beetle and California red-legged frog, including the 12.5-acre Inclusion Area A (IAA) preserve (off-site of the Ranch View Terrace project site) in the southwestern portion of the LRDP area and the 13-acre Inclusion Area D (IAD) preserve (on-site) directly south of the Ranch View Terrace project site (Figure 3.5-1). A 5.7-acre Ohlone tiger beetle management area was established within IAD.

### LOCAL

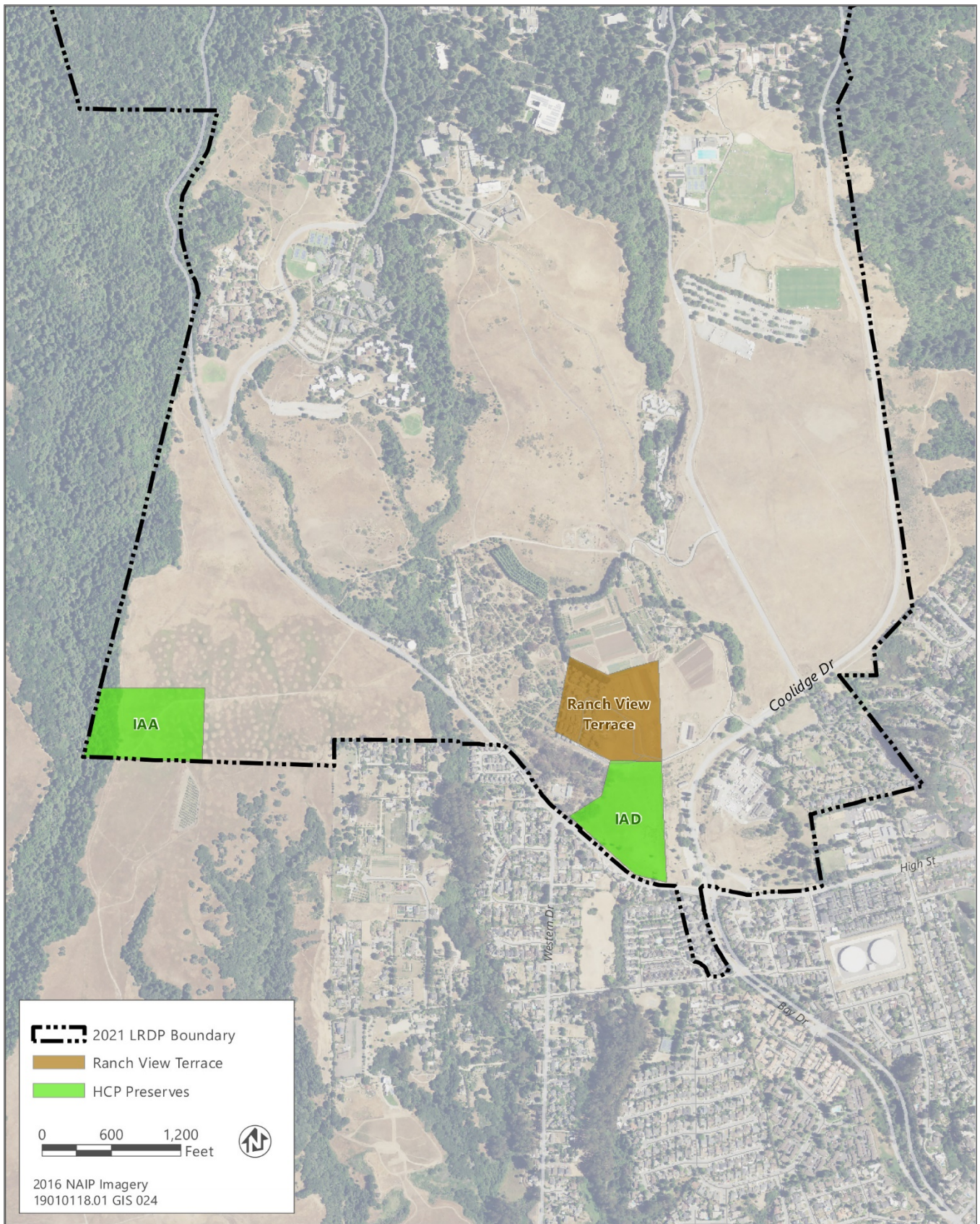
As noted in Section 3.0.1, "University of California Autonomy," UC Santa Cruz, a constitutionally created State entity, is not subject to municipal regulations of surrounding local governments for uses on property owned or controlled by UC Santa Cruz that are in furtherance of its educational purposes. However, UC Santa Cruz may consider, for coordination purposes, aspects of local plans and policies of the communities surrounding the campus when it is appropriate and feasible, but it is not bound by those plans and policies in its planning efforts.

### County of Santa Cruz General Plan

The Conservation and Open Space Element of the County of Santa Cruz General Plan contains the following policies related to biological resources in the county and that may be relevant to the 2021 LRDP:

#### Objective 5.1: Biological Diversity.

- ▶ **Policy 5.1.1: Sensitive Habitat Designation.** Designate the following area as sensitive habitats: (a) areas shown on the County General Plan and LCP Resources and Constraints Maps; (b) any undesignated area which meet the criteria (policy 5.1.2) and which are identified through the biotic review process or other means; and (c) areas of biotic concern as shown on the Resources and Constraints Maps which contain concentrations of rare, endangered, threatened or unique species.
- ▶ **Policy 5.1.2: Definition of Sensitive Habitat.** An area is defined as a sensitive habitat if it meets one or more of the following criteria:
  - (a) Areas of special biological significance as identified by the State Water Resources Control Board.
  - (b) Areas which provide habitat for locally unique biotic species/communities, including coastal scrub, maritime chaparral, native rhododendrons and associated Elkgrass, mapped grasslands in the coastal zone and sand parkland; and Special Forests including San Andreas Live Oak Woodlands, Valley Oak, Santa Cruz Cypress, indigenous Ponderosa Pine, indigenous Monterey Pine and ancient forests.
  - (c) Areas adjacent to essential habitats of rare, endangered or threatened species as defined in (e) and (f) below.
  - (d) Areas which provide habitat for Species of Special Concern as listed by the California Department of Fish and Game in the Special Animals list, Natural Diversity Database.
  - (e) Areas which provide habitat for rare or endangered species which meet the definition of Section 15380 of the California Environmental Quality Act guidelines.
  - (f) Areas which provide habitat for rare, endangered or threatened species as designated by the State Fish and Game Commission, United State Fish and Wildlife Service or California Native Plant Society.



Source: data received from UC Santa Cruz in 2020

Figure 3.5-1 Ranch View Terrace Habitat Conservation Plan Area

- (g) Nearshore reefs, rocky intertidal areas, seacaves, islets, offshore rocks, kelp beds, marine mammal hauling grounds, sandy beaches, shorebird roosting, resting and nesting areas, cliff nesting areas and marine, wildlife or educational/research reserves.
  - (h) Dune plant habitats.
  - (i) All lakes, wetlands, estuaries, lagoons, streams and rivers.
  - (j) Riparian corridors.
- ▶ **Policy 5.1.3: Environmentally Sensitive Habitats.** Designate the areas described in 5.1.2 (d) through (j) as Environmentally Sensitive Habitats per the California Coastal Act and allow only uses dependent on such resources in these habitats within the Coastal Zone unless other uses are:
    - (a) consistent with sensitive habitat protection policies and serve a specific purpose beneficial to the public;
    - (b) it is determined through environmental review that any adverse impacts on the resource will be completely mitigated and that there is no feasible less-damaging alternative; and
    - (c) legally necessary to allow a reasonable economic use of the land, and there is no feasible less-damaging alternative.
  - ▶ **Policy 5.1.6: Development Within Sensitive Habitats.** Sensitive habitats shall be protected against any significant disruption of habitat values; and any proposed development within or adjacent to these areas must maintain or enhance the functional capacity of the habitat. Reduce in scale, redesign, or, if no other alternative exists, deny any project which cannot sufficiently mitigate significant adverse impacts on sensitive habitats unless approval of a project is legally necessary to allow a reasonable use of the land.
  - ▶ **Policy 5.1.8: Chemicals Within Sensitive Habitats.** Prohibit the use of insecticides, herbicides, or any toxic chemical substance in sensitive habitats, except when an emergency has been declared, when the habitat itself is threatened, when a substantial risk to public health and safety exists, including maintenance for flood control by Public Works, or when such use is authorized pursuant to a permit issued by the Agricultural Commissioner.
  - ▶ **Policy 5.1.9: Biotic Assessments.** Within the following areas, require a biotic assessment as part of normal project review to determine whether a full biotic report should be prepared by a qualified biologist:
    - (a) Areas of biotic concern, mapped;
    - (b) Sensitive habitats, mapped & unmapped.
  - ▶ **Policy 5.1.10: Species Protection.** Recognize that habitat protection is only one aspect of maintaining biodiversity and that certain wildlife species, such as migratory birds, may not utilize specific habitats. Require protection of these individual rare, endangered and threatened species and continue to update policies as new information becomes available.
  - ▶ **Policy 5.1.11: Wildlife Resources Beyond Sensitive Habitats.** For areas which may not meet the definition of sensitive habitat contained in policy 5.1.2, yet contain valuable wildlife resources (such as migration corridors or exceptional species diversity), protect these wildlife habitat values and species using the techniques outlined in policies 5.1.5 and 5.1.7 and use other mitigation measures identified through the environmental review process.
  - ▶ **Policy 5.1.14: Removal of Invasive Plant Species.** Encourage the removal of invasive species and their characteristic native plants, except where such invasive species provide significant habitat value and where removal of such species would severely degrade the existing habitat. In such cases, develop long-term plans for gradual conversion to native species providing equal or better habitat values.

## Objective 5.2: Riparian Corridors and Wetlands.

- ▶ **Policy 5.2.1: Designation of Riparian Corridors and Wetlands.** Designate and define the following areas as Riparian Corridors:
  - (a) 50' from the top of a distinct channel or physical evidence of high water mark of a perennial stream;

- (b) 30' from the top of a distinct channel or physical evidence of high water mark of an intermittent stream as designated on the General Plan maps and through field inspection of undesignated intermittent and ephemeral streams;
- (c) 100' of the high water mark of a lake, wetland, estuary, lagoon, or natural body of standing water;
- (d) The landward limit of a riparian woodland plant community;
- (e) Wooded arroyos within urban areas.

Designate and define the following areas as Wetlands:

Transitional areas between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is covered by shallow water periodically or permanently. Examples of wetlands are saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens.

The US Army Corps of Engineers, and other federal agencies utilize a "unified methodology" which defines wetlands as "those areas meeting certain criteria for hydrology, vegetation, and soils."

### City of Santa Cruz 2030 General Plan

The Natural Resources and Conservation Element of the City of Santa Cruz General Plan contains the following policies related to biological resources in the city and that may be relevant to the 2021 LRDP:

**GOAL NRC1:** Protected, enhanced, and sustainably managed creek systems, riparian environments, and wetlands.

- ▶ **Policy NRC 1.1:** Protect the city's river and wetland areas while increasing and enhancing public access where appropriate.
- ▶ **Policy NRC 1.2:** Encourage low impact uses and practices in watershed lands upstream of the city's riverine, stream, and riparian environments.
- ▶ **Policy NRC 1.3:** Encourage the restoration and enhancement of existing riparian corridors, wetlands, and other water resources.

**GOAL NRC2:** Protected, enhanced, and sustainable native and natural plant and animal communities and habitats.

- ▶ **Policy NRC 2.1:** Protect, enhance, or restore habitat for special-status plant and animal species.
- ▶ **Policy NRC 2.2:** Protect sensitive habitat areas and important vegetation communities and wildlife habitat, to include riparian, wetland (salt marsh and freshwater wetland), coastal prairie, coastal bird habitat, and habitat that support special status species, as well as, sensitive and edge habitats ("ecotones").
- ▶ **Policy NRC 2.3:** Protect, enhance, and maintain significant dispersal corridors and buffers.
- ▶ **Policy NRC 2.4:** Protect, manage, and enhance tree groves and understory that provide sensitive habitat features.

**GOAL NRC 3:** Conservation and stewardship of resources.

- ▶ **Policy NRC 3.1:** Lead the community in conserving resources.
- ▶ **Policy NRC 3.2:** Discourage the use of environmentally harmful pesticides, herbicides, and chemical fertilizers.
- ▶ **Policy NRC 3.3:** Require resource conservation and environmental sensitivity in project design and construction.

**GOAL NRC 5:** An enhanced and sustainable urban forest.

- ▶ **Policy NRC 5.1:** Protect and manage tree resources in the urban environment, with emphasis on significant and heritage trees.
- ▶ **Policy NRC 5.2:** Increase the percent of tree canopy by promoting street tree planting.

**GOAL NRC 6:** Protected open space lands and coastline.

- ▶ **Policy NRC 6.1:** Manage and enhance open space and the coastline.
- ▶ **Policy NRC 6.3:** Enhance and protect native habitat areas within the Greenbelt and open spaces.

## 3.5.2 Environmental Setting

### VEGETATION COMMUNITIES

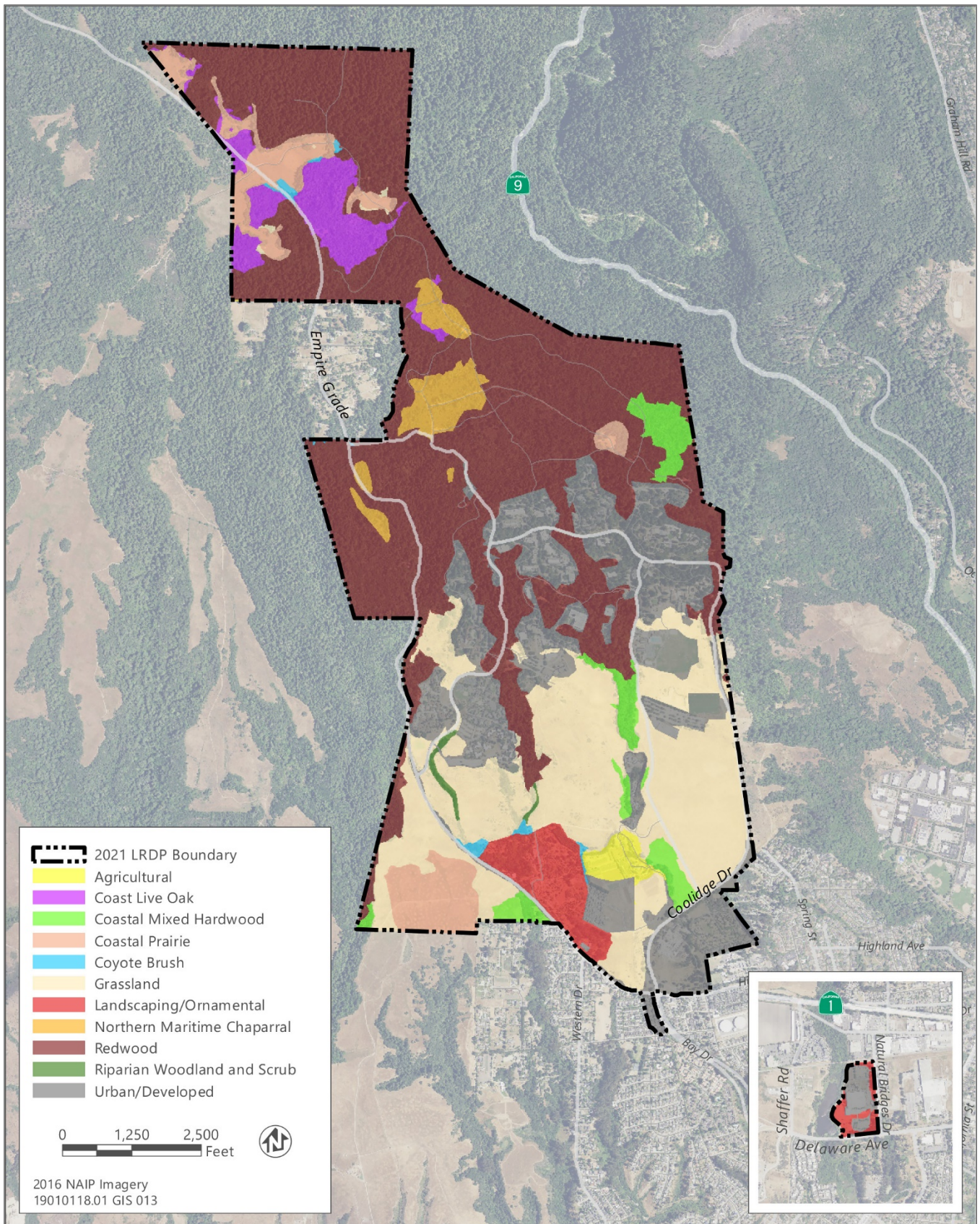
Vegetation communities within the LRDP area are summarized in Table 3.5-1 and Figures 3.5-2 and 3.5-3. The distribution of vegetation communities in the LRDP area were derived from recent mapping efforts conducted as part of the Conservation Lands Network project (Bay Area Open Space Council 2019). Because the 2019 mapping was conducted at a coarse scale, some vegetation communities are not presented, including known sensitive natural communities mapped for the 2005 LRDP (i.e., coastal prairie, northern maritime chaparral), and layers depicting these communities from 2005 LRDP were included for completeness (UC Santa Cruz 2005a, Figure 3.5-2). Because of the coarse scale of the 2019 mapping, some vegetation communities may be overrepresented or underrepresented in Table 3.5-1 and Figure 3.5-2. However, the overall habitat types as presented below and in Figure 3.5-1 are considered the best available comprehensive data and appropriate for this analysis. The impact analysis considers known sensitive natural communities. Confirmation of fine-scale vegetation community distribution will be conducted during project-specific review associated with 2021 LRDP implementation. Total acreages of each habitat type are presented in Table 3.5-1, and land cover types are described below in order of abundance.

**Table 3.5-1 Total Acres of Vegetation Communities in the LRDP area**

Vegetation Community Type	Size (acres)
<b>Terrestrial Habitats</b>	
Redwood	860.4
Urban/Developed	405.7
Grassland	399.0
Coastal Prairie	107.9
Coast Live Oak	74.0
Landscaping/Ornamental	63.6
Coastal Mixed Hardwood	61.4
Northern Maritime Chaparral	54.9
Agricultural	18.8
Coyote Brush	7.3
Riparian Woodland and Scrub	5.2
<b>Aquatic Habitats</b>	
Lake	0.3
Freshwater Forested/Shrub Wetland	0.3
Stream	7.2 miles
<i>Perennial Stream</i>	<i>1.7 miles</i>
<i>Intermittent Stream</i>	<i>2.4 miles</i>
<i>Swale</i>	<i>3.1 miles</i>

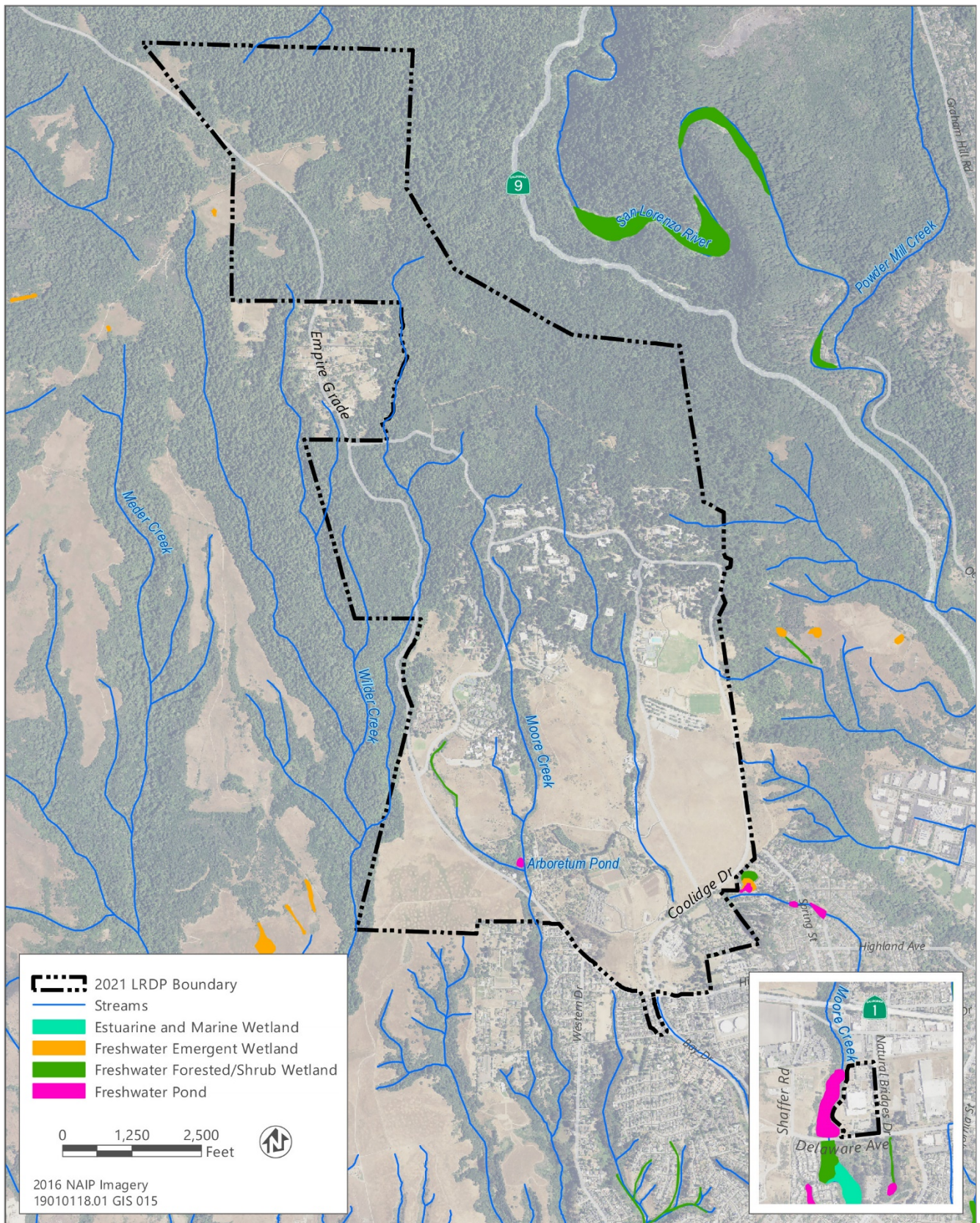
Source: Data compiled by Ascent Environmental in 2020; Bay Area Open Space Council 2019; CDFW 2020; UC Santa Cruz 2005a





Source: data downloaded from the Bay Area Open Space Council in 2019; adapted by Ascent Environmental in 2020

Figure 3.5-2 Vegetation Communities in the LRDP Area



Source: Data downloaded from the County of Santa Cruz and USFWS (County of Santa Cruz 2020, USFWS 2020b); adapted by Ascent Environmental in 2020

**Figure 3.5-3 Aquatic Habitat Mapped by the County of Santa Cruz and USFWS in the LRDP Area**

## Terrestrial Habitat

### Redwood

The LRDP area contains an estimated 860.4 acres of redwood habitat, which occurs throughout north campus and portions of central campus (Table 3.5-1, Figure 3.5-2). Redwood habitat is typically dominated by coast redwood trees (*Sequoia sempervirens*) and also contains tree canopy species including Douglas fir (*Psuedotsuga menziesii*), Pacific madrone (*Arbutus menziesii*), knobcone pine (*Pinus attenuata*), California bay (*Umbellularia californica*), and tan oak (*Notholithocarpus densiflorus*). The understory of redwood forests is typically sparse except for shade-tolerant ferns and forbs. Habitat mapped as redwood within the LRDP area intergrades with other forested habitat types: coast live oak and coastal mixed hardwood and may contain varying proportions of tree species associated with these types or be dominated by tree species other than redwood in some areas. This redwood habitat is mostly characterized as second growth (i.e., forests that have been previously logged) and there is no old growth redwood habitat in the LRDP area (UC Santa Cruz 1971:9).

Distinct stands of "dwarf" redwood trees have been observed within the LRDP area, characterized by trees with short stature (i.e., 10 to 50 feet tall) compared to typical adult redwood trees (i.e., 100 to 340 feet tall; UC Santa Cruz 2005a). Dwarf redwoods are not considered a distinct vegetation community type, but the uniqueness of these stands in the LRDP area may warrant additional consideration for campus planning purposes due to the potential rarity of this community type.

### Urban/Developed

The LRDP area contains approximately 405.7 acres of urban/developed habitat, primarily within central and lower campus (Figure 3.5-2, Table 3.5-1). Urban/developed areas within the LRDP area contain buildings associated with the UC Santa Cruz campus, including classrooms, libraries, laboratories, administration facilities, support facilities, residence halls, apartments, and recreational areas. Urban/developed areas also include parking lots, sidewalks, roads, and some landscaping. While urban/developed areas may not provide high quality habitat for wildlife due to a baseline level of disturbance (e.g., vehicle and foot traffic, noise, visual stimuli), some common and special-status wildlife species are known to occur within or in close proximity to developed areas.

### Grassland

The LRDP area contains approximately 399.0 acres of grassland habitat, which occurs primarily within lower campus and parts of central campus, including two grassland habitat areas referred to as the Great Meadow and the East Meadow (Table 3.5-1, Figure 3.5-2). Grasslands within the LRDP area are dominated by nonnative grasses, including slim oat (*Avena barbata*), riggut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), rattlesnake grass (*Briza maxima*), common velvetgrass (*Holcus lanatus*), and Italian rye grass (*Festuca perennis*), but also contains some native grass species, including California oat grass (*Danthonia californica*), purple needlegrass (*Stipa pulchra*), and California bromegrass (*Bromus carinatus*). Grassland habitat in the LRDP area also contains nonnative and native forbs.

### Coastal Prairie

The LRDP area contains approximately 107.9 acres of coastal prairie habitat, which is considered a sensitive natural community (Figure 3.5-2, Table 3.5-1). This habitat is present within portions of north and lower campus. Coastal prairie habitat is similar to other grassland habitat within the LRDP area, but with greater incidence of native grass species, including California oat grass and western panic grass (*Panicum acuminatum*). Coastal prairie habitat also supports a diverse assemblage of native forbs, including coyote thistle (*Eryngium armatum*), wild hyacinth (*Triteleia hyacinthina*), dwarf brodiaea (*Brodiaea terrestris*), and yampah (*Perideridia kelloggii*). Due to the coarse scale of vegetation mapping, some areas of the LRDP area mapped as grassland as shown in Figure 3.5-2, may meet the alliance requirements to be classified as coastal prairie.

Coastal prairie habitat in the southwest corner (west of Empire Grade) of the lower campus portion of the LRDP area and in the Marshall Fields complex in north campus is characterized by Mima mound habitat. Mima mounds are hillocks typically found in grassland habitat, the origin of which has been historically debated. Recent modelling studies support the "fossorial rodent hypothesis," which suggests that Mima mounds are built by burrowing mammals (e.g., pocket

gophers) over time to provide refuge from seasonally saturated soils or that they are the result of a combination of the biotic factors and abiotic factors, such as vegetation/erosion interactions (Cramer and Barger 2014, Gabet et al. 2014).

### **Coast Live Oak**

The LRDP area contains approximately 74.0 acres of coast live oak habitat within north campus (Figure 3.5-2, Table 3.5-1). This habitat is dominated by coast live oak (*Quercus agrifolia*) and in some areas, intergrades into habitat dominated by Douglas fir. Other tree species within the coast live oak habitat include Shreve oak (*Quercus parvula* var. *shrevei*), California bay, and Pacific madrone.

### **Landscaping/Ornamental**

The LRDP area contains approximately 63.6 acres of landscaping/ornamental habitat, which includes maintained lawns and landscape trees within the Westside Research Park and the UC Santa Cruz Arboretum and Botanic Garden in lower campus (Figure 3.5-2, Table 3.5-1). The UC Santa Cruz Arboretum and Botanic Garden includes various types of plantings, including a California native garden, a redwood grove, and gardens featuring plants from Australia, New Zealand, and South Africa (UC Santa Cruz 2017). While landscaping/ornamental habitat within the LRDP area may not be completely natural, much of it provides habitat for wildlife species.

### **Coastal Mixed Hardwood**

The LRDP area contains approximately 61.4 acres of coastal mixed hardwood habitat within north, central, and lower campus (Figure 3.5-2, Table 3.5-1). This habitat represents an intergrade from other habitat types within the LRDP area, particularly redwood and coast live oak habitats. Tree species within coastal mixed hardwood habitat include coast live oak, California bay, Pacific madrone, Douglas fir, ponderosa pine (*Pinus ponderosa*), and knobcone pine. Coastal mixed hardwood habitat in some portions of the LRDP area occurs in transitional communities between chaparral (described below) and redwood vegetation communities.

### **Northern Maritime Chaparral**

The LRDP area contains approximately 54.9 acres of northern maritime chaparral habitat, which is predominately located within north campus (Figure 3.5-2, Table 3.5-1). Northern maritime chaparral habitat within the LRDP area is typically dense and is dominated by brittle leaf manzanita (*Arctostaphylos crustacea*) and Santa Cruz manzanita (*Arctostaphylos andersonii*), which is a special-status plant species. Other species present include wartleaf ceanothus (*Ceanothus papillosus*), blue blossom (*Ceanothus thyrsiflorus* var. *thyrsiflorus*), yerba santa (*Eriodictyon californicum*), and knobcone pine.

### **Agricultural**

The main residential campus contains approximately 20 acres of agricultural habitat within the UC Santa Cruz Farm and the Chadwick Garden, which are facilities that support the UC Santa Cruz Center for Agroecology and Sustainable Food Systems (Figure 3.5-2, Table 3.5-1). This habitat includes row crops, orchards, research plots, as well as buildings, including greenhouses, laboratories, offices, and a visitor's center. Agricultural land typically does not provide high quality habitat for wildlife species; however, common species likely use this habitat for foraging and cover.

### **Coyote Brush**

The LRDP area contains approximately 7.3 acres of coyote brush scrub habitat in lower and north campus (Figure 3.5-2, Table 3.5-1). Coyote brush scrub habitat is dominated by coyote brush (*Baccharis pilularis*) along with other shrub species, including sticky monkeyflower (*Diplacus aurantiacus*), poison oak (*Toxicodendron diversilobum*), and blue blossom. Within the LRDP area, this habitat is located adjacent to grassland or coastal prairie habitats. Coyote brush may also occur in varying or patchy density in other portions of the LRDP area that are not currently mapped.

### **Riparian Woodland and Scrub**

The LRDP area contains approximately 5.2 acres of riparian woodland and scrub habitat, which is considered a sensitive natural community (Figure 3.5-2, Table 3.5-1). This habitat is present within central and lower campus and is associated with intermittent streams in the LRDP area. Tree species within riparian woodland and scrub habitat include willows (*Salix* spp.) black cottonwood (*Populus trichocarpa*), bigleaf maple (*Acer macrophyllum*), and California

hazelnut (*Corylus cornuta*). Understory species include California blackberry (*Rubus ursinus*), common snowberry (*Symphoricarpos albus*), giant chain fern (*Woodwardia fimbriata*), California wood-fern (*Dryopteris arguta*), and western swordfern (*Polystichum munitum*).

### Aquatic Habitat

Aquatic habitat within the LRDP area includes pond, stream, and wetland habitats (Figure 3.5-3). Approximately 7.2 miles of stream habitat occur in the LRDP area: approximately 1.7 miles of perennial stream habitat (e.g., Wilder Creek), approximately 2.4 miles of intermittent stream habitat, and approximately 3.1 miles of swale habitat (i.e., shallow ephemeral or intermittent wetland with gently sloping sides). This habitat includes intermittent stream habitat in Cave Gulch. The LRDP area contains approximately 0.3 acre of freshwater forested/shrub wetland habitat associated with riparian areas along intermittent stream habitat, both in central and lower campus. The LRDP area contains approximately 0.3 acre of pond habitat within the Arboretum Pond in the UC Santa Cruz Arboretum and Botanic Garden (known as the Arboretum Pond) (Figure 3.5-3). Antonelli Pond, which is located along Moore Creek, is adjacent to Westside Research Park; however, the pond is not located in the LRDP area. While much of the aquatic habitat in the LRDP area has been mapped, there may be additional aquatic habitat features (e.g., wetlands, seeps, springs, drainages) that have not been mapped. Seeps and springs are known to be present in north campus and typically occur in small patches (UC Santa Cruz 2005a). The distribution of wetland, seep, or drainage habitats will be determined using fine-scale mapping as development is proposed under the 2021 LRDP, but impacts are considered in this EIR.

## SENSITIVE BIOLOGICAL RESOURCES

### Special-Status Species

Special-status species are defined as species that are legally protected or that are otherwise considered sensitive by federal, state, or local resource agencies. Special-status species are species, subspecies, or varieties that fall into one or more of the following categories, regardless of their legal or protection status:

- ▶ officially listed by California under the California Endangered Species Act (CESA) or the federal government under the Endangered Species Act (ESA) as endangered, threatened, or rare;
- ▶ a candidate for state or federal listing as endangered, threatened, or rare under CESA or ESA;
- ▶ taxa (i.e., taxonomic category or group) that meet the criteria for listing, even if not currently included on any list, as described in Section 15380 of the State CEQA Guidelines;
- ▶ species identified by CDFW as Species of Special Concern;
- ▶ species listed as Fully Protected under the California Fish and Game Code;
- ▶ species afforded protection under local planning documents; and
- ▶ taxa considered by the CDFW to be “rare, threatened, or endangered in California” and assigned a California Rare Plant Rank (CRPR) of 1, 2, or 3. The CDFW system includes rarity and endangerment ranks for categorizing plant species of concern, and ranks 1, 2, and 3 are summarized as follows:
  - CRPR 1A - Plants presumed to be extinct in California;
  - CRPR 1B - Plants that are rare, threatened, or endangered in California and elsewhere;
  - CRPR 2A - Plants presumed to be extinct in California but common elsewhere;
  - CRPR 2B - Plants that are rare, threatened, or endangered in California but more common elsewhere; and
  - CRPR 3 - Plants about which more information is needed (a review list).

The term “California species of special concern” is applied by CDFW to animals not listed under ESA or CESA, but that are considered to be declining at a rate that could result in listing, or that historically occurred in low numbers and known threats to their persistence currently exist. CDFW’s fully protected status was California’s first attempt to identify and protect animals that were rare or facing extinction. Most species listed as fully protected were eventually

listed as threatened or endangered under CESA; however, some species remain listed as fully protected but do not have simultaneous listing under CESA. Fully protected species may not be taken or possessed at any time and no take permits can be issued for these species except for scientific research purposes, for relocation to protect livestock, or as part of an NCCP.

Of the 64 special-status plant species that are known to occur within the eight U.S. Geological Survey (USGS) 7.5-minute quadrangles including and surrounding the LRDP area, seven species is known to occur within the LRDP area, and 28 additional species were determined to have potential to occur in the LRDP area based on the presence of habitat suitable for the species (California Natural Diversity Database [CNDDDB] 2020, CNPS 2020, Table 3.5-2). Of the 66 special-status wildlife species that could occur within the eight USGS quadrangles, 19 species are known to occur within the LRDP area (currently or historically) and 16 additional species were determined to have potential to occur in the LRDP area based on the presence of habitat suitable for the species (CNDDDB 2020, Table 3.5-3). The tables describe the species' regulatory status, habitat, and potential for occurrence in the LRDP area.

**Table 3.5-2 Special-Status Plant Species Known to Occur in the Vicinity of the LRDP area and Their Potential for Occurrence in the LRDP area**

Species	Federal Listing Status <sup>1</sup>	Status <sup>1</sup> State Listing	CRPR	Habitat	Potential for Occurrence <sup>2</sup>
Blasdale's bent grass <i>Agrostis blasdalei</i>	–	–	1B.2	Coastal dunes, coastal bluff scrub, coastal prairie. Sandy or gravelly soil close to rocks; often in nutrient-poor soil with sparse vegetation. 16–1,198 feet in elevation. Blooms May–July.	<i>May occur.</i> The LRDP area contains coastal prairie habitat potentially suitable for this species.
Bent-flowered fiddleneck <i>Amsinckia lunaris</i>	–	–	1B.2	Cismontane woodland, valley and foothill grassland, coastal bluff scrub. 10–2,608 feet in elevation. Blooms March–June.	<i>May occur.</i> The LRDP area contains woodland and grassland habitat potentially suitable for this species.
Santa Cruz manzanita <i>Arctostaphylos andersonii</i>	–	–	1B.2	Broadleaved upland forest, chaparral, north coast coniferous forest. Open sites, redwood forest. 197–2,493 feet in elevation. Blooms November–May.	<i>Known to occur.</i> Santa Cruz manzanita has been documented within northern maritime chaparral habitat in the LRDP area and is a dominant species in some areas (UC Santa Cruz 2005a).
Schreiber's manzanita <i>Arctostaphylos glutinosa</i>	–	–	1B.2	Closed-cone coniferous forest, chaparral. Mudstone or diatomaceous shale outcrops; often with knobcone pine ( <i>Pinus attenuata</i> ). 558–2,247 feet in elevation. Blooms March–April.	<i>Not expected to occur.</i> The LRDP area is outside of the known range of this species (Kauffmann et al. 2015).
Ohlone manzanita <i>Arctostaphylos ohloneana</i>	–	–	1B.1	Coastal scrub, closed cone coniferous forests. Monterey shale. 1,476–1,739 feet in elevation. Blooms February–March.	<i>Not expected to occur.</i> The LRDP area is outside of the known range of this species (Kauffmann et al. 2015).
Pajaro manzanita <i>Arctostaphylos pajaroensis</i>	–	–	1B.1	Chaparral. Sandy soils. 98–509 feet in elevation. Blooms December–March.	<i>Not expected to occur.</i> The LRDP area is outside of the known range of this species (Kauffmann et al. 2015).
Kings Mountain manzanita <i>Arctostaphylos regismontana</i>	–	–	1B.2	Broadleaved upland forest, chaparral, north coast coniferous forest. Granitic or sandstone outcrops. 787–2,313 feet in elevation. Blooms December–April.	<i>Not expected to occur.</i> The LRDP area is outside of the known range of this species (Kauffmann et al. 2015).
Bonny Doon manzanita <i>Arctostaphylos silvicola</i>	–	–	1B.2	Chaparral, closed-cone coniferous forest, lower montane coniferous forest. Only known from Zayante sands in Santa Cruz County. 492–1,706 feet in elevation. Blooms January–March.	<i>Not expected to occur.</i> The LRDP area does not contain Zayante soil habitat.

Species	Federal Listing Status <sup>1</sup>	Status <sup>1</sup> State Listing	CRPR	Habitat	Potential for Occurrence <sup>2</sup>
Marsh sandwort <i>Arenaria paludicola</i>	FE	SE	1B.1	Marshes and swamps. Growing up through dense mats of <i>Typha</i> , <i>Juncus</i> , <i>Scirpus</i> , etc. in freshwater marsh. Sandy soil. 10–558 feet in elevation. Blooms May–August.	<i>Not expected to occur.</i> The LRDP area does not contain marsh or swamp habitat.
Santa Cruz Mountains pussypaws <i>Calyptridium parryi</i> var. <i>hesseae</i>	–	–	1B.1	Chaparral, cismontane woodland. Sandy or gravelly openings. 984–5,036 feet in elevation. Blooms May–August.	<i>May occur.</i> The LRDP area contains chaparral and woodland habitat potentially suitable for this species.
Swamp harebell <i>Campanula californica</i>	–	–	1B.2	Bogs and marshes in a variety of habitats; uncommon where it occurs. 3–1,329 feet in elevation. Blooms June–October.	<i>Not expected to occur.</i> The LRDP area does not contain bog or marsh habitat.
Bristly sedge <i>Carex comosa</i>	–	–	2B.1	Lake margins, wet places. 16–5,315 feet in elevation. Blooms May–September.	<i>May occur.</i> The LRDP area contains wetland habitat potentially suitable for this species.
Deceiving sedge <i>Carex saliniformis</i>	–	–	1B.2	Coastal prairie, coastal scrub, meadows and seeps, saltmarshes, and swamps. Mesic sites. 10–755 feet in elevation. Blooms June.	<i>Known to occur.</i> This species was thought to be extirpated from Santa Cruz County until several colonies were discovered in 2000 in forested areas on the UC Santa Cruz campus (Neubauer 2013).
Congdon's tarplant <i>Centromadia parryi</i> ssp. <i>congdonii</i>	–	–	1B.1	Valley and foothill grassland. Alkaline soils sometimes described as heavy white clay. 0–755 feet in elevation. Blooms May–October.	<i>Not expected to occur.</i> The LRDP area does not contain alkaline soils.
Ben Lomond spineflower <i>Chorizanthe pungens</i> var. <i>hartwegiana</i>	FE	–	1B.1	Lower montane coniferous forest. Zayante coarse sands in maritime ponderosa pine sandhills. 344–1,558 feet in elevation. Blooms April–July.	<i>Not expected to occur.</i> The LRDP area does not contain Zayante soil habitat.
Monterey spineflower <i>Chorizanthe pungens</i> var. <i>pungens</i>	FT	–	1B.2	Sandy soils in coastal dunes or more inland within chaparral or other habitats. 0–558 feet in elevation. Blooms April–June.	<i>May occur.</i> The LRDP area contains chaparral habitat potentially suitable for this species.
Scotts Valley spineflower <i>Chorizanthe robusta</i> var. <i>hartwegii</i>	FE	–	1B.1	Meadows, valley and foothill grassland. In grasslands with mudstone and sandstone outcrops. 344–804 feet in elevation. Blooms April–July.	<i>May occur.</i> The LRDP area contains grassland habitat potentially suitable for this species.
Robust spineflower <i>Chorizanthe robusta</i> var. <i>robusta</i>	FE	–	1B.1	Cismontane woodland, coastal dunes, coastal scrub, chaparral. Sandy terraces and bluffs or in loose sand. 30–804 feet in elevation. Blooms April–September.	<i>May occur.</i> The LRDP area contains woodland and chaparral habitat potentially suitable for this species.
Mt. Hamilton fountain thistle <i>Cirsium fontinale</i> var. <i>campylon</i>	–	–	1B.2	In seasonal and perennial drainages on serpentine. 328–2,920 feet in elevation. Blooms April–October.	<i>Not expected to occur.</i> The LRDP area does not contain serpentine habitat.
San Francisco collinsia <i>Collinsia multicolor</i>	–	–	1B.2	Closed-cone coniferous forest, coastal scrub. On decomposed shale (mudstone) mixed with humus; sometimes on serpentine. 98–820 feet in elevation. Blooms March–May.	<i>May occur.</i> The LRDP area contains forest habitat potentially suitable for this species.
Tear drop moss <i>Dacryophyllum falcifolium</i>	–	–	1B.3	North Coast coniferous forest. Limestone substrates and rock outcrops. 164–902 feet in elevation.	<i>May occur.</i> The LRDP area contains limestone soils.

Species	Federal Listing Status <sup>1</sup>	Status <sup>1</sup> State Listing	CRPR	Habitat	Potential for Occurrence <sup>2</sup>
Western leatherwood <i>Dirca occidentalis</i>	–	–	1B.2	On brushy slopes, mesic sites; mostly in mixed evergreen and foothill woodland communities. 82–1,394 feet in elevation. Blooms January–March.	<i>Not expected to occur.</i> The LRDP area is outside of the known range of this species.
Santa Clara Valley dudleya <i>Dudleya abramsii</i> ssp. <i>setchellii</i>	FE	–	1B.1	On rocky serpentine outcrops and on rocks within grassland or woodland. 197–1,493 feet in elevation. Blooms April–October.	<i>Not expected to occur.</i> The LRDP area does not contain serpentine habitat.
Ben Lomond buckwheat <i>Eriogonum nudum</i> var. <i>decurrens</i>	–	–	1B.1	Chaparral, cismontane woodland, lower montane coniferous forest. Ponderosa pine sandhills in Santa Cruz County. 164–2,625 feet in elevation. Blooms June–October.	<i>Not expected to occur.</i> The LRDP area does not contain sandhills habitat.
Menzies' wallflower <i>Erysimum menziesii</i>	FE	SE	1B.1	Localized on dunes and coastal strand. 3–82 feet in elevation. Blooms March–September.	<i>Not expected to occur.</i> The LRDP area does not contain dune or coastal strand habitat.
Santa Cruz wallflower <i>Erysimum teretifolium</i>	FE	SE	1B.1	Lower montane coniferous forest, chaparral. Inland marine sands (Zayante coarse sand). 591–1,690 feet in elevation. Blooms March–July.	<i>Not expected to occur.</i> The LRDP area does not contain Zayante soil habitat.
Minute pocket moss <i>Fissidens pauperculus</i>	–	–	1B.2	Redwood. Moss growing on damp soil along the coast. In dry streambeds and on stream banks. 33–3,360 feet in elevation.	<i>May occur.</i> The LRDP area contains redwood and stream habitat potentially suitable for this species.
Fragrant fritillary <i>Fritillaria liliacea</i>	–	–	1B.2	Often on serpentine; various soils reported though usually on clay, in grassland. 10–1,312 feet in elevation. Blooms February–April.	<i>Not expected to occur.</i> The LRDP area does not contain serpentine habitat.
Toren's grimmia <i>Grimmia torenii</i>	–	–	1B.3	Openings, rocky, boulder and rock walls, carbonate, volcanic. 1,066–3,806 feet in elevation.	<i>Not expected to occur.</i> The LRDP area does not contain carbonate or volcanic soils.
Vaginulate grimmia <i>Grimmia vaginulata</i>	–	–	1B.1	Limestone. Chaparral. Openings; rocky, boulder and rock walls, carbonate. 2,247–3,724 feet in elevation.	<i>May occur.</i> The plan contains limestone soils.
San Francisco gumplant <i>Grindelia hirsutula</i> var. <i>maritima</i>	–	–	3.2	Sandy or serpentine slopes, sea bluffs. 49–1,001 feet in elevation. Blooms June–September.	<i>Not expected to occur.</i> The LRDP area does not contain serpentine habitat.
Short-leaved evax <i>Hesperevax sparsiflora</i> var. <i>brevifolia</i>	–	–	1B.2	Coastal bluff scrub, coastal dunes, coastal prairie. Sandy bluffs and flats. 0–705 feet in elevation. Blooms March–June.	<i>May occur.</i> The LRDP area contains coastal prairie habitat potentially suitable for this species.
Santa Cruz cypress <i>Hesperocyparis abramsiana</i> var. <i>abramsiana</i>	FT	SE	1B.2	Restricted to the Santa Cruz Mountains, on sandstone and granitic-derived soils; often with knobcone pine, redwoods. 984–3,560 feet in elevation.	<i>May occur.</i> The LRDP area contains forest habitat potentially suitable for this species.
Butano Ridge cypress <i>Hesperocyparis abramsiana</i> var. <i>butanoensis</i>	FT	SE	1B.2	Closed-cone coniferous forest, lower montane coniferous forest, chaparral. Sandstone. 1,312–1,608 feet in elevation.	<i>May occur.</i> The LRDP area contains forest and chaparral habitat potentially suitable for this species.
Loma Prieta hoita <i>Hoita strobilina</i>	–	–	1B.1	Serpentine; mesic sites. 197–3,199 feet in elevation. Blooms May–July.	<i>Not expected to occur.</i> The LRDP area does not contain serpentine habitat.



Species	Federal Listing Status <sup>1</sup>	Status <sup>1</sup> State Listing	CRPR	Habitat	Potential for Occurrence <sup>2</sup>
Santa Cruz tarplant <i>Holocarpha macradenia</i>	FT	SE	1B.1	Coastal prairie, coastal scrub, valley and foothill grassland. Light, sandy soil or sandy clay; often with nonnatives. 33–722 feet in elevation. Blooms June–October.	<i>May occur.</i> The LRDP area contains grassland and coastal prairie habitat potentially suitable for this species.
Kellogg's horkelia <i>Horkelia cuneata</i> var. <i>sericea</i>	–	–	1B.1	Old dunes, coastal sandhills; openings. 16–705 feet in elevation. Blooms April–September.	<i>Not expected to occur.</i> The LRDP area does not contain dune or sandhill habitat.
Point Reyes horkelia <i>Horkelia marinensis</i>	–	–	1B.2	Sandy flats and dunes near coast; in grassland or scrub plant communities. 7–2,543 feet in elevation. Blooms May–September.	<i>Known to occur.</i> This species has been documented within the Marshall Fields complex in the north campus portion of the LRDP area (CNDDDB 2020). The LRDP area contains additional grassland habitat potentially suitable for this species.
Perennial goldfields <i>Lasthenia californica</i> ssp. <i>macrantha</i>	–	–	1B.2	Coastal bluff scrub, coastal dunes, coastal scrub. 16–607 feet in elevation. Blooms January–November.	<i>Not expected to occur.</i> The LRDP area does not contain coastal dune or scrub habitat.
Woolly-headed lessingia <i>Lessingia hololeuca</i>	–	–	3	Clay, serpentine; roadsides, fields. 49–1,001 feet in elevation. Blooms June–October.	<i>Not expected to occur.</i> The LRDP area does not contain serpentine habitat.
Smooth lessingia <i>Lessingia micradenia</i> var. <i>glabrata</i>	–	–	1B.2	Serpentine; often on roadsides. 394–1,378 feet in elevation. Blooms July–November.	<i>Not expected to occur.</i> The LRDP area does not contain serpentine habitat.
Arcuate bush-mallow <i>Malacothamnus arcuatus</i>	–	–	1B.2	Chaparral, cismontane woodland. Gravelly alluvium. 3–2,411 feet in elevation. Blooms April–September.	<i>May occur.</i> The LRDP area contains chaparral and woodland habitat potentially suitable for this species.
Mt. Diablo cottonweed <i>Micropus amphibolus</i>	–	–	3.2	Bare, grassy or rocky slopes. 148–2,707 feet in elevation. Blooms March–May.	<i>May occur.</i> The LRDP area contains grassland habitat potentially suitable for this species.
Marsh microseris <i>Microseris paludosa</i>	–	–	1B.2	Closed-cone coniferous forest, cismontane woodland, coastal scrub, valley and foothill grassland. 16–984 feet in elevation. Blooms April–June.	<i>Known to occur.</i> This species has been documented in the Marshall Fields complex in the north campus portion of the LRDP area (CNDDDB 2020). The LRDP area contains forest and grassland habitat potentially suitable for this species.
Northern curly-leaved monardella <i>Monardella sinuata</i> ssp. <i>nigrescens</i>	–	–	1B.2	Coastal dunes, coastal scrub, chaparral, lower montane coniferous forest. Sandy soils. 0–984 feet in elevation. Blooms May–July.	<i>May occur.</i> The LRDP area contains chaparral and forest habitat potentially suitable for this species.
Woodland woollythreads <i>Monolopia gracilens</i>	–	–	1B.2	Grassy sites, in openings; sandy to rocky soils. Often seen on serpentine after burns but may have only weak affinity to serpentine. 328–3,937 feet in elevation. Blooms March–July.	<i>May occur.</i> The LRDP area contains grassland habitat potentially suitable for this species.

Species	Federal Listing Status <sup>1</sup>	Status <sup>1</sup> State Listing	CRPR	Habitat	Potential for Occurrence <sup>2</sup>
Kellman's bristle moss <i>Orthotrichum kellmanii</i>	–	–	1B.2	Sandstone outcrops with high calcium concentrations from eroded boulders out of non-calcareous sandstone bedrock. Rock outcrops in small openings within dense chaparral with overstory of scattered knobcone pine. 1,125–2,247 feet in elevation. Blooms January–February.	<i>May occur.</i> The LRDP area contains chaparral habitat potentially suitable for this species.
Dudley's lousewort <i>Pedicularis dudleyi</i>	–	SR	1B.2	Deep shady woods of older coast redwood forests; also in maritime chaparral. 197–2,953 feet in elevation. Blooms April–June.	<i>May occur.</i> The LRDP area contains redwood and chaparral habitat potentially suitable for this species.
Santa Cruz Mountains beardtongue <i>Penstemon rattanii</i> var. <i>kleei</i>	–	–	1B.2	Sandy shale slopes; sometimes in the transition between forest and chaparral. 1,312–3,609 feet in elevation. Blooms May–June.	<i>May occur.</i> The LRDP area contains forest and chaparral habitat potentially suitable for this species.
White-rayed pentachaeta <i>Pentachaeta bellidiflora</i>	FE	SE	1B.1	Open dry rocky slopes and grassy areas, often on soils derived from serpentine bedrock. 115–2,001 feet in elevation. Blooms March–May.	<i>May occur.</i> The LRDP area contains grassland habitat potentially suitable for this species.
Monterey pine <i>Pinus radiata</i>	–	–	1B.1	Closed-cone coniferous forest, cismontane woodland. Three primary stands are native to California. Dry bluffs and slopes. 197–410 feet in elevation.	<i>May occur.</i> While the LRDP area is not within the known primary stands of this species, the nearest known occurrence of this species is approximately 0.2 mile south of the LRDP area (CNDDDB 2020). The LRDP area contains forest habitat potentially suitable for this species.
White-flowered rein orchid <i>Piperia candida</i>	–	–	1B.2	Sometimes on serpentine. Forest duff, mossy banks, rock outcrops, and bogs. 148–5,299 feet in elevation. Blooms May–September.	<i>May occur.</i> The LRDP area contains forest habitat potentially suitable for this species.
Choris' popcornflower <i>Plagiobothrys chorianus</i> var. <i>chorianus</i>	–	–	1B.2	Chaparral, coastal scrub, coastal prairie. Mesic sites. 49–525 feet in elevation. Blooms March–June.	<i>May occur.</i> The LRDP area contains chaparral and coastal prairie habitat potentially suitable for this species.
San Francisco popcornflower <i>Plagiobothrys diffusus</i>	–	SE	1B.1	Valley and foothill grassland, coastal prairie. Historically from grassy slopes with marine influence. 148–1,181 feet in elevation. Blooms March–June.	<i>Known to occur.</i> This species has been documented in the Marshall Fields complex in the north campus portion of the LRDP area (CNDDDB 2020). The LRDP area contains grassland and coastal prairie habitat potentially suitable for this species.
Hairless popcornflower <i>Plagiobothrys glaber</i>	–	–	1A	Coastal salt marshes and alkaline meadows. 16–591 feet in elevation. Blooms March–May.	<i>Not expected to occur.</i> The LRDP area does not contain alkaline soils.
Scotts Valley polygonum <i>Polygonum hickmanii</i>	FE	SE	1B.1	Purisima sandstone or mudstone with a thin soil layer; vernal moist due to runoff. 689–755 feet in elevation. Blooms May–August.	<i>Not expected to occur.</i> The LRDP area is outside of the known, limited range of this species.
Rock sanicle <i>Sanicula saxatilis</i>	–	SR	1B.2	Bedrock outcrops and talus slopes in chaparral or oak woodland habitat. 2,198–4,101 feet in elevation. Blooms April–May.	<i>Not expected to occur.</i> The LRDP area does not contain outcrop or talus slope habitat.
Chaparral ragwort <i>Senecio aphanactis</i>	–	–	2B.2	Chaparral, cismontane woodland, coastal scrub. Drying alkaline flats. 66–2,805 feet in elevation. Blooms January–April.	<i>Not expected to occur.</i> The LRDP area does not contain alkaline soils.

Species	Federal Listing Status <sup>1</sup>	Status <sup>1</sup> State Listing	CRPR	Habitat	Potential for Occurrence <sup>2</sup>
San Francisco campion <i>Silene verecunda</i> ssp. <i>verecunda</i>	–	–	1B.2	Coastal scrub, valley and foothill grassland, coastal bluff scrub, chaparral, coastal prairie. Often on mudstone or shale; one site on serpentine. 98–2,116 feet in elevation. Blooms March–June.	<i>May occur.</i> The LRDP area contains grassland, chaparral, and coastal prairie habitat potentially suitable for this species.
Santa Cruz microseris <i>Stebbinsoseris decipiens</i>	–	–	1B.2	Open areas in loose or disturbed soil, usually derived from sandstone, shale, or serpentine, on seaward slopes. 33–1,640 feet in elevation. Blooms April–May.	<i>May occur.</i> The LRDP area contains sandstone habitat potentially suitable for this species.
Metcalf Canyon jewelflower <i>Streptanthus albidus</i> ssp. <i>albidus</i>	FE	–	1B.1	Relatively open areas in dry grassy meadows on serpentine soils; also on serpentine balds. 148–2,625 feet in elevation. Blooms April–July.	<i>Not expected to occur.</i> The LRDP area does not contain serpentine habitat.
Most beautiful jewelflower <i>Streptanthus albidus</i> ssp. <i>peramoenus</i>	–	–	1B.2	Serpentine outcrops, on ridges and slopes. 312–3,281 feet in elevation. Blooms April–September.	<i>Not expected to occur.</i> The LRDP area does not contain serpentine habitat.
Santa Cruz clover <i>Trifolium buckwestiorum</i>	–	–	1B.1	Moist grassland. Gravelly margins. 344–2,001 feet in elevation. Blooms April–October.	<i>Known to occur.</i> This species has been documented in the Marshall Fields complex in the north campus portion of the LRDP area (CNDDDB 2020). The LRDP area contains potentially grassland habitat.
Pacific Grove clover <i>Trifolium polyodon</i>	–	SR	1B.1	Along small springs and seeps in grassy openings. 16–394 feet in elevation. Blooms April–June.	<i>Known to occur.</i> This species has been documented in the Marshall Fields complex in the north campus portion of the LRDP area (CNDDDB 2020). The LRDP area contains seep habitat within grasslands potentially suitable for this species.

Notes: CRPR = California Rare Plant Rank; CESA = California Endangered Species Act; CEQA = California Environmental Quality Act; ESA = Endangered Species Act; NPPA = Native Plant Protection Act

#### 1 Legal Status Definitions

##### Federal:

FE Federally Listed as Endangered (legally protected by ESA)

FT Federally Listed as Threatened (legally protected by ESA)

##### State:

SE State Listed as Endangered (legally protected by CESA)

SR State Listed as Rare (legally protected by NPPA)

##### California Rare Plant Ranks:

1A Plant species that are presumed extirpated or extinct because they have not been seen or collected in the wild in California for many years. A plant is extinct if it no longer occurs anywhere. A plant that is extirpated from California has been eliminated from California but may still occur elsewhere in its range.

1B Plant species considered rare or endangered in California and elsewhere (protected under CEQA, but not legally protected under ESA or CESA).

2B Plant species considered rare or endangered in California but more common elsewhere (protected under CEQA, but not legally protected under ESA or CESA).

3 Plant species for which there is not enough information to assign the species to one of the other ranks or reject them.

##### Threat Ranks:

0.1 Seriously threatened in California (over 80% of occurrences threatened; high degree and immediacy of threat)

0.2 Moderately threatened in California (20-80% occurrences threatened; moderate degree and immediacy of threat)

0.3 Not very threatened in California (less than 20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

#### 2 Potential for Occurrence Definitions

Not expected to occur: Species is unlikely to be present because of poor habitat quality, lack of habitat features suitable for the species, or restricted current distribution of the species.

May occur: Habitat suitable for the species is available and there have been nearby recorded occurrences of the species.

Known to occur: The species has been observed within the LRDP area.

Sources: CNDDDB 2020; CNPS 2020; Kauffmann et al. 2015; Neubauer 2013

**Table 3.5-3 Special-Status Wildlife Species Known to Occur in the Vicinity of the LRDP area and Their Potential for Occurrence in the LRDP area**

Species	Federal Listing Status <sup>1</sup>	State Listing Status <sup>1</sup>	Habitat	Potential for Occurrence <sup>2</sup>
<b>Amphibians and Reptiles</b>				
California giant salamander <i>Dicamptodon ensatus</i>	–	SSC	Known from wet coastal forests near streams and seeps from Mendocino County south to Monterey County and east to Napa County. Aquatic larvae found in cold, clear streams, occasionally in lakes and ponds. Adults known from wet forests under rocks and logs near streams and lakes.	<i>Known to occur.</i> This species is known to breed within Cave Gulch and its tributaries and has been documented in the north campus portion of the LRDP area and within Empire Cave (Jones, pers. comm., 2020, CNDDDB 2020). Habitat potentially suitable for this species is present within stream and seep habitat and in wet upland areas throughout forested areas of the LRDP area.
California red-legged frog <i>Rana draytonii</i>	FT	SSC	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby, or emergent riparian vegetation. Requires 11-20 weeks of permanent water for larval development. Must have access to estivation habitat.	<i>Known to occur.</i> California red legged frog is known to occur within numerous locations in the southwestern portion of the LRDP area (e.g., within Moore Creek), and is known to breed in the Arboretum Pond (Biosearch Environmental Consulting 2020, CNDDDB 2020). Additional aquatic breeding habitat is present within two miles of the LRDP area (Biosearch Environmental Consulting 2020). The LRDP area contains approximately 970 acres of critical habitat for California red-legged frog.
California tiger salamander <i>Ambystoma californiense</i>	FT	ST	Need underground refuges, especially ground squirrel burrows, and vernal pools or other seasonal water sources for breeding.	<i>Not expected to occur.</i> The majority of the LRDP area is outside of the known range of this species. The nearest known California tiger salamander occurrence is approximately 12 miles southeast of the LRDP area (CNDDDB 2020). The LRDP area does not contain wetland or vernal pool habitat suitable for this species.
Coast horned lizard <i>Phrynosoma blainvillii</i>	–	SSC	Frequents a wide variety of habitats, most common in lowlands along sandy washes with scattered low bushes. Open areas for sunning, bushes for cover, patches of loose soil for burial, and abundant supply of ants and other insects.	<i>May occur.</i> The nearest known occurrence of coast horned lizard is approximately 23 miles east of the LRDP area (CNDDDB 2020). Habitat potentially suitable for coast horned lizard is present within grasslands and open areas in chaparral and forest habitats.
Foothill yellow-legged frog West/Central Coast clade <i>Rana boylei</i>	–	SE	Partly-shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. Need at least some cobble-sized substrate for egg-laying. Need at least 15 weeks to attain metamorphosis.	<i>Known to occur.</i> There is a historic known occurrence of foothill yellow-legged frog in the LRDP area within stream habitat in Cave Gulch (1959), and approximately 1.9 miles north of the LRDP area (1931; CNDDDB 2020). Habitat potentially suitable for this species is present within stream habitat in the LRDP area.

Species	Federal Listing Status <sup>1</sup>	State Listing Status <sup>1</sup>	Habitat	Potential for Occurrence <sup>2</sup>
San Francisco gartersnake <i>Thamnophis sirtalis tetrataenia</i>	FE	SE FP	Vicinity of freshwater marshes, ponds and slow-moving streams in San Mateo County and extreme northern Santa Cruz County. Prefers dense cover and water depths of at least one foot. Upland areas near water are also very important.	<i>Not expected to occur.</i> The LRDP area is outside of the known range of this species.
Santa Cruz black salamander <i>Aneides niger</i>	–	SSC	Mixed deciduous and coniferous woodlands and coastal grasslands in San Mateo, Santa Cruz, and Santa Clara counties. Adults found under rocks, talus, and damp woody debris.	<i>Known to occur.</i> This species is known to occur within the LRDP area and has been documented near the Quarry Amphitheater and in Jordan Gulch (Jones, pers. comm., 2020, CNDDDB 2020). There are several additional occurrences within approximately 1 mile of the LRDP area (CNDDDB 2020).
Santa Cruz long-toed salamander <i>Ambystoma macrodactylum croceum</i>	FE	SE FP	Freshwater marsh, marsh and swamp, and wetlands. Wet meadows near sea level in a few restricted locales in Santa Cruz and Monterey counties. Aquatic larvae prefer shallow water, using clumps of vegetation or debris for cover. Adults use mammal burrows.	<i>Not expected to occur.</i> Within Santa Cruz County, this species is limited to a small number of restricted localities, none of which are located within the LRDP area (CNDDDB 2020).
Southwestern pond turtle <i>Actinemys pallida</i>	–	SSC	Aquatic turtle of ponds, marshes, rivers, streams, and irrigation ditches, usually with aquatic vegetation, below 6,000 feet elevation. Need basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.3 mile from water for egg-laying.	<i>Known to occur.</i> There is one known occurrence of southwestern pond turtle within the LRDP area in the Arboretum Pond (CNDDDB 2020). Aquatic habitat suitable for this species is present within stream habitat in the LRDP area, and upland habitat potentially suitable for the species is present within surrounding grasslands and open areas in chaparral and forested areas.
Western spadefoot <i>Spea hammondi</i>	–	SSC	Occurs primarily in grassland habitats but can be found in valley-foothill hardwood woodlands. Vernal pools are essential for breeding and egg-laying.	<i>Not expected to occur.</i> The LRDP area is outside of the known range of this species.
<b>Birds</b>				
American peregrine falcon <i>Falco peregrinus anatum</i>	FD	SD FP	Near wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds; also, human-made structures. Nest consists of a scrape or a depression or ledge in an open site.	<i>May occur.</i> There are no documented peregrine falcon nest sites within the LRDP area; however, there are many recent observations of the species within and adjacent to the LRDP area (CNDDDB 2020, eBird 2020). Habitat potentially suitable for nesting for this species is present on human-made structures or ledges in the LRDP area.
Bald eagle <i>Haliaeetus leucocephalus</i>	FD	SE FP	Ocean shore, lake margins, and rivers for both nesting and wintering. Most nests within 1 mile of water. Nests in large, old-growth, or dominant live tree with open branches, especially ponderosa pine. Roosts communally in winter.	<i>May occur.</i> There are no documented bald eagle nest sites within the LRDP area; however, there are many recent observations of the species within and adjacent to the LRDP area (CNDDDB 2020, eBird 2020). Habitat potentially suitable for nesting for this species is present within large trees in the LRDP area.

Species	Federal Listing Status <sup>1</sup>	State Listing Status <sup>1</sup>	Habitat	Potential for Occurrence <sup>2</sup>
Bank swallow <i>Riparia riparia</i>	–	ST	Riparian scrub, riparian woodland. Colonial nester; nests primarily in riparian and other lowland habitats west of the desert. Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, ocean to dig nesting hole.	<i>Not expected to occur.</i> There is one known historic (1950) occurrence of bank swallow approximately 1 mile east of the LRDP area, potentially associated with the San Lorenzo River (CNDDDB 2020). However, bank swallows are considered extirpated from Santa Cruz County (Remsen 1978).
Black swift <i>Cypseloides niger</i>	–	SSC	Coastal belt of Santa Cruz and Monterey Co; central and southern Sierra Nevada; San Bernardino and San Jacinto Mountains. Breeds in small colonies on cliffs behind or adjacent to waterfalls in deep canyons and sea-bluffs above the surf; forages widely.	<i>May occur.</i> Black swifts are known to breed within ocean-facing cliffs and caves along the coast approximately 4 miles west of the LRDP area (CNDDDB 2020). While the LRDP area does not contain nesting habitat suitable for this species, black swifts may forage within the LRDP area.
Bryant's savannah sparrow <i>Passerculus sandwichensis alaudinus</i>	–	SSC	Restricted to a narrow coastal strip from Humboldt Bay south to the Morro Bay area. This sparrow occupies low tidally influenced habitats, adjacent ruderal areas, moist grasslands within and just above the fog belt, and, infrequently, drier grasslands.	<i>Known to occur.</i> The LRDP area is within the range of this species, and habitat potentially suitable for the species is present within grasslands in the LRDP area. Bryant's savannah sparrow has been observed breeding within IAA and has been observed during the breeding season in the Great Meadow and East Meadow (Jones, pers. comm., 2020).
Burrowing owl <i>Athene cucularia</i>	–	SSC	Open, dry annual or perennial grasslands, deserts and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	<i>Known to occur.</i> Burrowing owls are known to occur within two locations in the southern portion of the LRDP area (CNDDDB 2020). Habitat potentially suitable for this species is present within grasslands and open areas within chaparral habitat in the LRDP area.
California black rail <i>Laterallus jamaicensis coturniculus</i>	–	ST FP	Inhabits freshwater marshes, wet meadows and shallow margins of saltwater marshes bordering larger bays. Needs water depths of about 1 inch that do not fluctuate during the year and dense vegetation for nesting habitat.	<i>Not expected to occur.</i> While there is one historic (1941) black rail occurrence within approximately 1 mile of the LRDP area, the LRDP area is outside of the current known range of this species.
California brown pelican <i>Pelecanus occidentalis californicus</i>	FD	SD FP	Colonial nester on coastal islands just outside the surf line. Nests on coastal islands of small to moderate size which afford immunity from attack by ground-dwelling predators. Roosts communally.	<i>Not expected to occur.</i> Brown pelicans likely roost along nearby coastal areas; however, there is no roosting habitat suitable for pelicans within the LRDP area.
California condor <i>Gymnogyps californianus</i>	FE	SE FP	Require vast expanses of open savannah, grasslands, and foothill chaparral in mountain ranges of moderate altitude. Deep canyons containing clefts in the rocky walls provide nesting sites. Forages up to 100 miles from roost/nest.	<i>Not expected to occur.</i> The LRDP area is outside of the known range of this species, and there are no known nesting occurrences within the LRDP area (CNDDDB 2020).
California least tern <i>Sternula antillarum browni</i>	FE	SE FP	Nests along the coast from San Francisco Bay south to northern Baja California. Colonial breeder on bare or sparsely vegetated, flat substrates: sand beaches, alkali flats, landfills, or paved areas.	<i>Not expected to occur.</i> The LRDP area is outside of the known range of this species.

Species	Federal Listing Status <sup>1</sup>	State Listing Status <sup>1</sup>	Habitat	Potential for Occurrence <sup>2</sup>
Golden eagle <i>Aquila chrysaetos</i>	–	FP	Rolling foothills, mountain areas, sage-juniper flats, and desert. Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open areas.	<i>May occur.</i> There are no documented golden eagle nest sites within the LRDP area; however, there are many recent observations of the species within and adjacent to the LRDP area (CNDDDB 2020, eBird 2020). Nesting habitat potentially suitable for this species is present within large trees in the LRDP area.
Least Bell's vireo <i>Vireo bellii pusillus</i>	FE	SE	Riparian forest, riparian scrub, riparian woodland. Summer resident of Southern California in low riparian in vicinity of water or in dry river bottoms; below 2,000 feet. Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, Baccharis, mesquite.	<i>Not expected to occur.</i> The LRDP area is outside of the current known range of the species.
Loggerhead shrike <i>Lanius ludovicianus</i>	–	SSC	Broken woodlands, savannah, pinyon-juniper, Joshua tree, and riparian woodlands, desert oases, scrub, and washes. Prefers open country for hunting, with perches for scanning, and fairly dense shrubs and brush for nesting.	<i>May occur.</i> There are no known loggerhead shrike nesting sites within the LRDP area; however, there have been many recent observations of the species within and adjacent to the LRDP area (CNDDDB 2020, eBird 2020). Nesting habitat potentially suitable for this species is present within chaparral habitat in the LRDP area.
Marbled murrelet <i>Brachyramphus marmoratus</i>	FT	SE	Lower montane coniferous forest, old growth, redwood. Feeds near-shore; nests inland along coast from Eureka to Oregon border and from Half Moon Bay to Santa Cruz. Nests in old-growth redwood-dominated forests, up to six miles inland, often in Douglas-fir.	<i>Not expected to occur.</i> The nearest known marbled murrelet occurrence is approximately 4.5 miles northwest of the LRDP area (CNDDDB 2020). The LRDP area is located within the known marbled murrelet breeding range. The LRDP area also contains approximately 3.8 acres of critical habitat for marbled murrelet and is surrounded by other critical habitat areas within Henry Cowell Redwoods State Park to the north and east and Wilder Ranch State Park to the southwest (Figure 3.5-3). However, the LRDP area does not contain old growth or old second growth habitat, which characterizes suitable breeding habitat for the species (California Department of Parks and Recreation 2017). Thus, marbled murrelets are not expected to breed within the LRDP area.
Mountain plover <i>Charadrius montanus</i>	–	SSC	Short grasslands, freshly plowed fields, newly sprouting grain fields, and sometimes sod farms. Short vegetation, bare ground, and flat topography. Prefers grazed areas and areas with burrowing rodents.	<i>Not expected to occur.</i> The LRDP area is outside of the known range of this species.

Species	Federal Listing Status <sup>1</sup>	State Listing Status <sup>1</sup>	Habitat	Potential for Occurrence <sup>2</sup>
Northern harrier <i>Circus hudsonius</i>	–	SSC	Coastal salt and fresh-water marsh. Nest and forage in grasslands, from salt grass in desert sink to mountain cienagas. Nests on ground in shrubby vegetation, usually at marsh edge; nest built of a large mound of sticks in wet areas.	<i>May occur.</i> There are no documented northern harrier nesting occurrences within the LRDP area; however, the species is common within the LRDP area, and there have been many recent observations of the species within and adjacent to the LRDP area (Jones, pers. comm., 2020, CNDDDB 2020, eBird 2020). Nesting habitat potentially suitable for northern harrier is present within grassland habitat in the LRDP area.
Olive-sided flycatcher <i>Contopus cooperi</i>	–	SSC	Nesting habitats are mixed conifer, montane hardwood-conifer, Douglas-fir, redwood, red fir, and lodgepole pine. Most numerous in montane conifer forests where tall trees overlook canyons, meadows, lakes, or other open terrain.	<i>Known to occur.</i> Olive-sided flycatchers have been observed nesting within forest habitat in upper campus (Jones, pers. comm., 2020). Additionally, there have been many recent observations of the species within and adjacent to the LRDP area (eBird 2020). Nesting habitat potentially suitable for this species is present within redwood and other forested habitat in the LRDP area.
Purple martin <i>Progne subis</i>	–	SSC	Inhabits woodlands, low elevation coniferous forest of Douglas-fir, ponderosa pine, and Monterey pine. Nests in old woodpecker cavities mostly, also in human-made structures. Nest often located in tall, isolated tree/snag.	<i>May occur.</i> There are no known purple martin nesting occurrences within the LRDP area; however, there have been many recent observations of the species within and adjacent to the LRDP area (CNDDDB 2020, eBird 2020). Nesting habitat potentially suitable for this species is present within forested habitat and human made structures in the LRDP area.
Saltmarsh common yellowthroat <i>Geothlypis trichas sinuosa</i>	–	SSC	Resident of the San Francisco Bay region, in fresh and saltwater marshes. Requires thick, continuous cover down to water surface for foraging; tall grasses, tule patches, willows for nesting.	<i>Not expected to occur.</i> The LRDP area is within the known range of this species; however, there is no saltwater marsh habitat in the LRDP area.
Southwestern willow flycatcher <i>Empidonax traillii extimus</i>	FE	SE	Riparian woodlands in Southern California.	<i>Not expected to occur.</i> The LRDP area is outside of the known range of this species.
Tricolored blackbird <i>Agelaius tricolor</i>	–	ST SSC	Highly colonial species, most numerous in Central Valley and vicinity. Largely endemic to California. Requires open water, protected nesting substrate, and foraging area with insect prey within a few kilometers of the colony.	<i>May occur.</i> The nearest known tricolored blackbird nesting colony is located in Antonelli Pond, directly adjacent to the Westside Research Park portion of the LRDP area (CNDDDB 2020). Additionally, there have been many recent observations of the species within and adjacent to the LRDP area (eBird 2020). Nesting habitat potentially suitable for tricolored blackbird is present adjacent to aquatic habitat in the LRDP area.
Vaux's swift <i>Chaetura vauxi</i>	–	SSC	Redwood, Douglas-fir, and other coniferous forests. Nests in large hollow trees and snags. Often nests in flocks. Forages over most terrains and habitats but shows a preference for foraging over rivers and lakes.	<i>May occur.</i> There are no known Vaux's swift nesting occurrences within the LRDP area; however, there have been many recent observations of the species within and adjacent to the LRDP area (CNDDDB 2020, eBird 2020). Nesting habitat potentially suitable for this species is present within redwood and other forested habitat in the LRDP area.



Species	Federal Listing Status <sup>1</sup>	State Listing Status <sup>1</sup>	Habitat	Potential for Occurrence <sup>2</sup>
Western snowy plover <i>Charadrius alexandrinus nivosus</i>	FT	SSC	Great Basin standing waters, sand shore, wetland. Sandy beaches, salt pond levees and shores of large alkali lakes. Needs sandy, gravelly, or friable soils for nesting.	<i>Not expected to occur.</i> Western snowy plovers are known to occur within coastal areas near the LRDP area (CNDDDB 2020). However, the LRDP area does not contain suitable sandy or gravel beach habitat for this species.
White-tailed kite <i>Elanus leucurus</i>	–	FP	Rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland. Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	<i>Known to occur.</i> White-tailed kite nests have been documented within redwood forest habitat, in the UC Santa Cruz Arboretum and Botanic Garden, and in the central campus portion of the LRDP area (Jones, pers. comm., 2020, CNDDDB 2020). Additionally, there have been many recent observations of the species within and adjacent to the LRDP area (eBird 2020). Nesting habitat potentially suitable for this species is present within forested and riparian areas in the LRDP area.
Yellow rail <i>Coturnicops noveboracensis</i>	–	SSC	Summer resident in eastern Sierra Nevada in Mono County. Fresh-water marshlands.	<i>Not expected to occur.</i> The LRDP area is outside of the known range of this species. While there have been some observations of yellow rails in Santa Cruz County, there are no known occurrences in the LRDP area (CNDDDB 2020, eBird 2020).
Yellow warbler <i>Setophaga petechia</i>	–	SSC	Riparian forest, riparian scrub, riparian woodland. Riparian plant associations in close proximity to water. Also nests in montane shrubbery in open conifer forests in Cascades and Sierra Nevada. Frequently found nesting and foraging in willow shrubs and thickets, and in other riparian plants including cottonwoods, sycamores, ash, and alders.	<i>May occur.</i> There are no known yellow warbler nesting occurrences within the LRDP area; however, there have been many recent observations of the species within and adjacent to the LRDP area (CNDDDB 2020, eBird 2020). Nesting habitat potentially suitable for this species is present within riparian habitat in the LRDP area.
Yellow-breasted chat <i>Icteria virens</i>	–	SSC	Riparian forest, riparian scrub, riparian woodland. Summer resident; inhabits riparian thickets of willow and other brushy tangles near watercourses. Nests in low, dense riparian, consisting of willow, blackberry, wild grape; forages and nests within 10 feet of ground.	<i>May occur.</i> There are no known yellow-breasted chat nesting occurrences within the LRDP area; however, there have been many recent observations of the species within and adjacent to the LRDP area (CNDDDB 2020, eBird 2020). Nesting habitat potentially suitable for this species is present within riparian habitat in the LRDP area.
<b>Fish</b>				
Coho salmon - central California coast ESU <i>Oncorhynchus kisutch</i> pop. 4	FE	SE	Federal listing refers to populations between Punta Gorda and San Lorenzo River. State listing includes populations south of Punta Gorda. Require beds of loose, silt-free, coarse gravel for spawning. Also need cover, cool water, and sufficient dissolved oxygen.	<i>Not expected to occur.</i> The LRDP area does not contain aquatic habitat suitable for this species.

Species	Federal Listing Status <sup>1</sup>	State Listing Status <sup>1</sup>	Habitat	Potential for Occurrence <sup>2</sup>
Eulachon <i>Thaleichthys pacificus</i>	FT	–	Found in Klamath River, Mad River, Redwood Creek and in small numbers in Smith River and Humboldt Bay tributaries. Spawn in lower reaches of coastal rivers with moderate water velocities and bottom of pea-sized gravel, sand, and woody debris	<i>Not expected to occur.</i> The LRDP area does not contain aquatic habitat suitable for this species.
Pacific lamprey <i>Entosphenus tridentatus</i>	–	SSC	Found in Pacific Coast streams north of San Luis Obispo County, however regular runs in Santa Clara River.	<i>Not expected to occur.</i> The LRDP area does not contain aquatic habitat suitable for this species.
Riffle sculpin <i>Cottus gulosus</i>	–	SSC	Found in headwater streams with cold water and rocky or gravelly substrate.	<i>Not expected to occur.</i> The LRDP area does not contain aquatic habitat suitable for this species.
San Joaquin roach <i>Lavinia symmetricus</i> ssp. 1	–	SSC	Tributaries to the San Joaquin River from the Cosumnes River south.	<i>Not expected to occur.</i> The LRDP area does not contain aquatic habitat suitable for this species.
Steelhead - central California coast DPS <i>Oncorhynchus mykiss irideus</i> pop. 8	FT	–	From Russian River, south to Soquel Creek and to, but not including Pajaro River. Also San Francisco and San Pablo Bay basins.	<i>Not expected to occur.</i> Steelhead have been documented within Wilder Creek, a small portion of which is within the LRDP area. However, the upstream limit of anadromy is located about 0.4 mile downstream from Cave Gulch, which is outside of the LRDP area (Center for Ecosystem Management and Restoration 2020).
Steelhead - south-central California coast DPS <i>Oncorhynchus mykiss irideus</i> pop. 9	FT	–	Federal listing refers to runs in coastal basins from the Pajaro River south to, but not including the Santa Maria River.	<i>Not expected to occur.</i> The LRDP area is outside of the range of this species.
Tidewater goby <i>Eucyclogobius newberryi</i>	FE	SSC	Brackish water habitats along the California coast from Agua Hedionda Lagoon, San Diego County to the mouth of the Smith River. Found in shallow lagoons and lower stream reaches, they need fairly still but not stagnant water and high oxygen levels.	<i>Not expected to occur.</i> The LRDP area does not contain aquatic habitat suitable for this species.
<b>Invertebrates</b>				
Bay checkerspot butterfly <i>Euphydryas editha bayensis</i>	FT	–	Restricted to native grasslands on outcrops of serpentine soil in the vicinity of San Francisco Bay. <i>Plantago erecta</i> is the primary host plant; <i>Orthocarpus densiflorus</i> and <i>Orthocarpus purpurascens</i> are the secondary host plants.	<i>Not expected to occur.</i> The LRDP area is outside of the known range of this species.
Black abalone <i>Haliotis cracherodii</i>	FE	–	Marine intertidal and splash zone communities. Mid to low rocky intertidal areas.	<i>Not expected to occur.</i> The LRDP area does not contain intertidal habitat suitable for this species.

Species	Federal Listing Status <sup>1</sup>	State Listing Status <sup>1</sup>	Habitat	Potential for Occurrence <sup>2</sup>
Dolloff cave spider <sup>3</sup> <i>Meta dolloff</i>	–	–	Limestone. Known from caves in the Santa Cruz area. This species is an orb-weaver and occurs from the cave mouth into deep twilight.	<i>Known to occur.</i> This species is known to occur within cave habitat in the LRDP area and has also been identified within soil pits surrounding the UC Santa Cruz Forest Ecology Research Plot in the north campus portion of the LRDP area, indicating that the species may occur within other non-cave habitats (Krohn and Jones 2020).
Empire Cave amphipod <sup>3</sup> <i>Stygobromus imperialis</i>	–	–	Aquatic. Endemic to Empire Cave in Santa Cruz County	<i>Known to occur.</i> This species is known to occur within cave habitat in the LRDP area.
Empire Cave pseudoscorpion <sup>3</sup> <i>Fissilicreagris imperialis</i>	–	–	Limestone. Known only from Empire Cave in Santa Cruz County.	<i>Known to occur.</i> This species is known to occur within cave habitat in the LRDP area.
MacKenzie's Cave amphipod <sup>3</sup> <i>Stygobromus mackenziei</i>	–	–	Aquatic, limestone. Known only from Empire Cave. A metamorphosed limestone cave subject to intermittent flooding.	<i>Known to occur.</i> This species is known to occur within cave habitat in the LRDP area.
Monarch butterfly - California overwintering population <i>Danaus plexippus</i> pop. 1	–	–	Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico. Roosts located in wind-protected tree groves (Eucalyptus, Monterey pine, cypress), with nectar and water sources nearby.	<i>Known to occur.</i> Monarch butterflies are known to overwinter in trees within the UC Santa Cruz Arboretum and Botanic Garden. Habitat potentially suitable for this species is present within forested areas and tree groves throughout the LRDP area.
Mount Hermon (=barbate) June beetle <i>Polyphylla barbata</i>	FE	–	Interior dunes. Occurs only within "sandhills" habitat (i.e., certain habitats containing Zayante soils, which are excessively drained sandy soils that formed in weakly consolidated marine sediments) in Santa Cruz County. Known only from sandhills in vicinity of Mt. Hermon, Santa Cruz County.	<i>Not expected to occur.</i> The LRDP area does not contain Zayante soil habitat.
Ohlone tiger beetle <i>Cicindela ohlone</i>	FE	–	Remnant native grasslands with California oatgrass ( <i>Danthonia californica</i> ) and purple needlegrass ( <i>Stipa pulchra</i> ) in Santa Cruz County. Substrate is poorly-drained clay or sandy clay soil over bedrock of Santa Cruz mudstone.	<i>Known to occur.</i> Ohlone tiger beetle is known to occur in lower campus within the grassland/coastal prairie area in the southwest corner of the LRDP area west of Empire Grade, including IAA (one of the preserves established for the Ranch View Terrace HCP), and within the Marshall Fields complex in north campus (Arnold 2020, Jones, pers. comm., 2020). The species has potential to occur within portions of the LRDP area that contain grassland or coastal prairie habitats associated with Watsonville loam soils (Arnold 2020).
Santa Cruz telemid spider <sup>3</sup> <i>Telema</i> sp.	–	–	Limestone. Known from caves in the Santa Cruz area.	<i>Known to occur.</i> This species is known to occur within cave habitat in the LRDP area.

Species	Federal Listing Status <sup>1</sup>	State Listing Status <sup>1</sup>	Habitat	Potential for Occurrence <sup>2</sup>
Smith's blue butterfly <i>Euphilotes enoptes smithi</i>	FE	–	Most commonly associated with coastal dunes and coastal sage scrub plant communities in Monterey and Santa Cruz counties. Hostplant: <i>Eriogonum latifolium</i> and <i>Eriogonum parvifolium</i> are utilized as both larval and adult foodplants.	<i>Not expected to occur.</i> The LRDP area is outside of the known range of this species.
Western bumble bee <i>Bombus occidentalis</i>	–	SC	Bumble bees have three basic habitat requirements: suitable nesting sites for the colonies, availability of nectar and pollen from floral resources throughout the duration of the colony period (spring, summer, and fall), and suitable overwintering sites for the queens.	<i>Not expected to occur.</i> The LRDP area is within the historic range of this species. However, western bumble bee has recently undergone a decline in abundance and distribution and is no longer present across much of its historic range. In California, western bumble bee populations are currently largely restricted to high elevation sites in the Sierra Nevada and a few locations on the northern California coast (Xerces Society 2018).
Zayante band-winged grasshopper <i>Trimerotropis infantilis</i>	FE	–	Isolated sandstone deposits in the Santa Cruz Mountains. Occurs only within "sandhills" habitat (i.e., certain habitats containing Zayante soils, which are excessively drained sandy soils that formed in weakly consolidated marine sediments) in Santa Cruz County.	<i>Not expected to occur.</i> The LRDP area does not contain Zayante soil habitat.
<b>Mammals</b>				
American badger <i>Taxidea taxus</i>	–	SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient food, friable soils, and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	<i>Known to occur.</i> Over 100 feeding digs associated with American badgers have been observed within the LRDP area, including within Great Meadow and the UC Santa Cruz Arboretum and Botanical Garden in lower campus (Jones, pers. comm., 2020). Additionally, an American badger carcass was recovered in 2004 within grassland habitat in the LRDP area (CNDDDB 2020). The LRDP area contains grassland and open chaparral and forest habitats potentially suitable for this species.
Mountain lion <i>Puma concolor</i>	–	SC	Mountain lions inhabit a wide range of ecosystems, including mountainous regions, forests, deserts, and wetlands. Mountain lions establish and defend large territories and can travel large distances in search of prey or mates. The Central Coast and Southern California Evolutionarily Significant Units (ESUs) were granted emergency listing status in April of 2020, and CDFW is currently reviewing a petition to list these ESUs as threatened under CESA.	<i>Known to occur.</i> Mountain lions have been documented traversing through the LRDP area, and it is likely that the LRDP area comprises a portion of the home range for many individual lions (Santa Cruz Puma Project 2020). While there are no known mountain lion dens within the LRDP area, potential den habitat (e.g., caves, cavities, thickets) may be present within less developed portions of the LRDP area.

Species	Federal Listing Status <sup>1</sup>	State Listing Status <sup>1</sup>	Habitat	Potential for Occurrence <sup>2</sup>
Pallid bat <i>Antrozous pallidus</i>	–	SSC	Deserts, grasslands, shrublands, woodlands and forests. Most common in open, dry habitats with rocky areas for roosting. Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	<i>May occur.</i> The nearest known historic (1928) occurrence of this species is approximately 4 miles east of the LRDP area (CNDDDB 2020). Roost habitat potentially suitable for this species is present in the LRDP area within rock areas and large trees.
Ringtail <i>Bassariscus astutus</i>	–	FP	Riparian habitats, forest habitats, and shrub habitats in lower to middle elevations. Usually found within 0.6 mile of a permanent water source.	<i>May occur.</i> Habitat potentially suitable for ringtail is present within riparian areas and forested areas near streams and drainages in the LRDP area.
San Francisco dusky-footed woodrat <i>Neotoma fuscipes annectens</i>	–	SSC	Chaparral, redwood. Forest habitats of moderate canopy and moderate to dense understory. May prefer chaparral and redwood habitats. Constructs nests of shredded grass, leaves, and other material. May be limited by availability of nest-building materials.	<i>Known to occur.</i> San Francisco dusky-footed woodrat nests have been observed within chaparral and forest habitats throughout the LRDP area, and the species is considered to be common within habitat areas suitable for the species (Jones, pers. comm., 2020). Habitat suitable for this species is present throughout chaparral, forest, and other wooded areas within the LRDP area.
Southern sea otter <i>Enhydra lutris nereis</i>	FT	FP	Aquatic, protected deepwater coastal communities. Nearshore marine environments from about Año Nuevo, San Mateo County to Point Sal, Santa Barbara County. Needs canopies of giant kelp and bull kelp for rafting and feeding. Prefers rocky substrates with abundant invertebrates.	<i>Not expected to occur.</i> The LRDP area does not contain marine habitat suitable for this species.
Townsend's big-eared bat <i>Corynorhinus townsendii</i>	–	SSC	Throughout California in a wide variety of habitats. Most common in mesic sites. Roosts in the open, hanging from walls and ceilings. Roosting sites limiting. Extremely sensitive to human disturbance.	<i>May occur.</i> The nearest known historic (1945) occurrence of this species is approximately 1 mile southwest of the LRDP area (CNDDDB 2020). Roost habitat potentially suitable for this species is present within buildings, other human-made structures (e.g., bridges), and cave systems in the LRDP area.
Western red bat <i>Lasiurus blossevillii</i>	–	SSC	Roosts primarily in trees, 2-40 feet above ground, from sea level up through mixed conifer forests. Prefers habitat edges and mosaics with trees that are protected from above and open below with open areas for foraging.	<i>May occur.</i> There are no known occurrences of western red bat within the LRDP area; however, habitat potentially suitable for this species is present within forested portions of the LRDP area.

Notes: CNDDDB = California Natural Diversity Database; CEQA = California Environmental Quality Act

#### 1 Legal Status Definitions

##### Federal:

- FE Federally Listed as Endangered (legally protected)
- FT Federally Listed as Threatened (legally protected)
- FD Federally Delisted

##### State:

- FP Fully protected (legally protected)
- SSC Species of special concern (no formal protection other than CEQA consideration)
- SE State Listed as Endangered (legally protected)
- ST State Listed as Threatened (legally protected)
- SC State Candidate for listing (legally protected)
- SD State Delisted

#### 2 Potential for Occurrence Definitions

Not expected to occur: Species is unlikely to be present because of poor habitat quality, lack of habitat features suitable for the species, or restricted current distribution of the species.

May occur: Habitat suitable for the species is available; however, there are little to no other indicators that the species might be present.

Known to occur: The species has been observed within the LRDP area.

- 3 Species associated with caves in the LRDP area are not listed under ESA or CESA; however, these species are considered locally important and potentially rare or endemic to the area.

Sources: CNDDDB 2020; eBird 2020; Jones, pers. comm., 2020; USFWS 2020a; Xerces 2018; Santa Cruz Puma Project 2020

## Critical Habitat

Critical habitat is mapped by USFWS and is defined in ESA as specific geographic areas that contain features essential for the conservation of a threatened or endangered species and that may require special management and protection. Critical habitat may include an area that is not currently occupied by the species but that may be needed for its recovery. Given the large scale at which critical habitat is mapped, it may also include areas that are not suitable for a species and would not be occupied. The LRDP area contains approximately 969.5 acres within the area mapped as California red-legged frog critical habitat, and approximately 3.8 acres of marbled murrelet critical habitat in the north eastern portion of the main residential campus (Figure 3.5-4). Again, the area mapped as critical habitat may not necessarily contain the features essential to conservation of the species. Making that determination requires site-specific habitat assessments or surveys.

A critical habitat designation only applies to activities performed by federal agencies or that involve a federal permit, license, or funding, and that are likely to destroy or adversely affect the area of critical habitat. UC Santa Cruz, as a state agency, is not required to consult with USFWS for nonfederal actions within critical habitat. However, as part of its consideration of whether to approve an HCP or issue or amend an incidental take permit for portions of the LRDP area, USFWS would be required to consult with itself under Section 7 of the ESA. Further, critical habitat is described in this EIR for informational purposes and to highlight the importance these areas may have to the recovery of California red-legged frog and marbled murrelet.

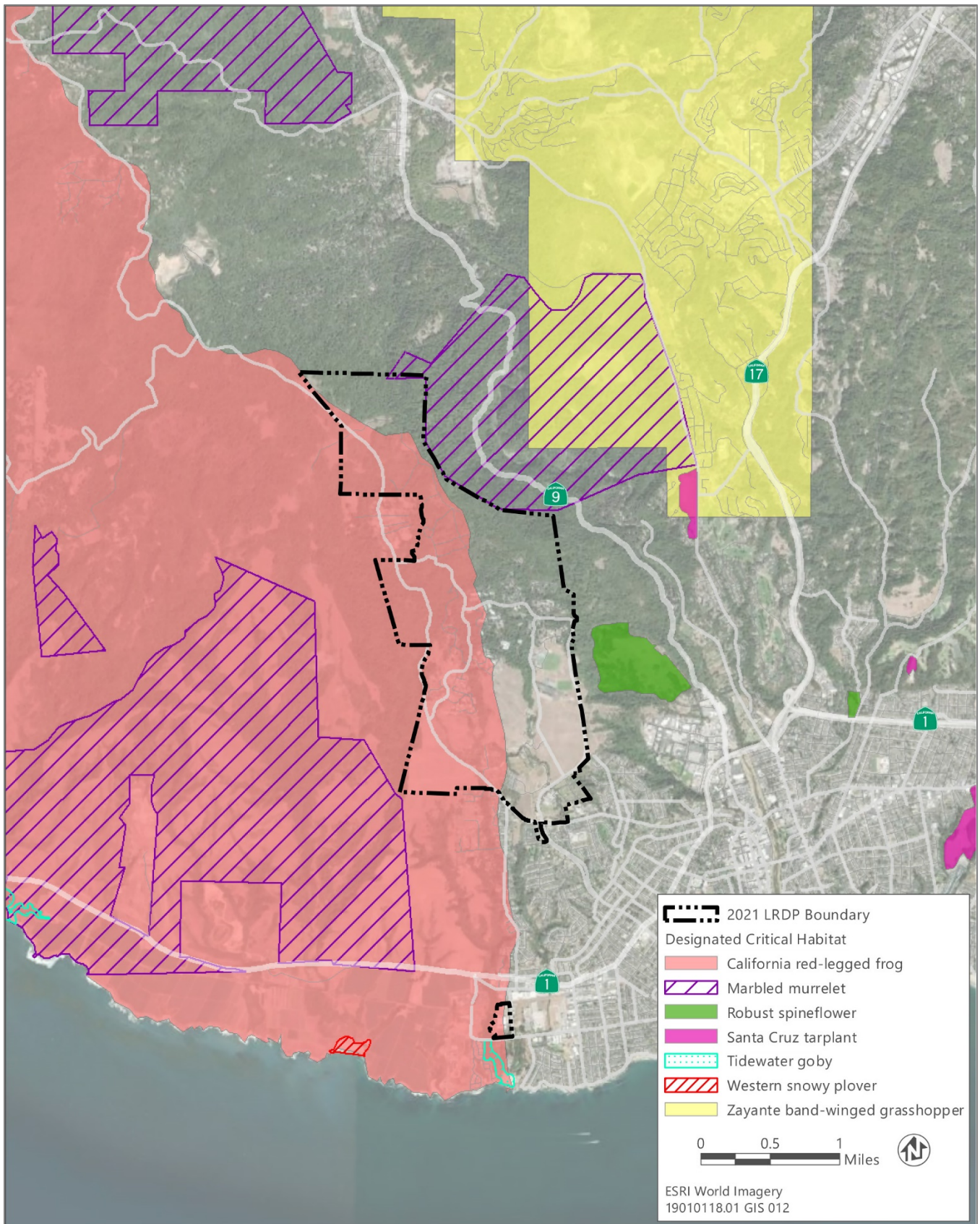
## Sensitive Natural Communities

Sensitive natural communities are those native plant communities defined by CDFW as having limited distribution statewide or within a county or region and that are often vulnerable to environmental effects of projects (CDFW 2018). These communities may or may not contain special-status plants or their habitat (CDFW 2018). CDFW designates sensitive natural communities based on their state rarity and threat ranking using NatureServe's Heritage Methodology. Natural communities with rarity ranks of S1 to S3, where S1 is critically imperiled, S2 is imperiled, and S3 is vulnerable, are considered sensitive natural communities to be addressed in the environmental review processes of CEQA and its equivalents (CDFW 2018).

Sensitive natural communities are generally identified at the alliance level of vegetation classification hierarchy using the Manual of California Vegetation (Sawyer et al. 2009). Known occurrences of sensitive natural communities are included in the CNDDDB; however, no new occurrences have been added to the CNDDDB since the mid-1990s when funding was cut for this portion of the CNDDDB program. Eight sensitive natural communities were identified within the eight USGS quadrangles surrounding the LRDP area through a query of the CNDDDB: north central coast drainage Sacramento sucker/roach river, north central coast California roach/stickleback/steelhead stream, north central coast short-run coho stream, northern maritime chaparral, northern coastal salt marsh, Monterey pine forest, northern interior cypress forest, and maritime coast range ponderosa pine forest (CNDDDB 2020). However, given the incomplete nature of this information in the CNDDDB, it is assumed that other sensitive natural communities may occur in the LRDP area based on the vegetation communities known to occur in the LRDP area, as identified below.

### North Central Coast Drainage Sacramento Sucker/Roach River

The nearest known occurrence of this sensitive natural community is within the San Lorenzo River, approximately 0.5 mile east of the LRDP area (CNDDDB 2020). The LRDP area does not contain north central coast drainage Sacramento sucker/roach river habitat.



Source: Data downloaded from USFWS in March 2020

**Figure 3.5-4 Critical Habitat in the Vicinity of the LRDP Area**

### **North Central Coast California Roach/Stickleback/Steelhead Stream**

The nearest known occurrence of this sensitive natural community is approximately 14 miles north of the LRDP area within Pescadero Creek (CNDDDB 2020). The LRDP area does not contain north central coast California roach/stickleback/steelhead stream habitat.

### **North Central Coast Short-run Coho Stream**

The nearest known occurrence of this sensitive natural community is approximately 8 miles northwest of the LRDP area within Scott Creek (CNDDDB 2020). The LRDP area does not contain north central coast short-run coho stream habitat.

### **Northern Maritime Chaparral**

The LRDP area contains approximately 54.9 acres of northern maritime chaparral habitat. The full description of this habitat can be found above under the "Vegetation Communities" section.

### **Northern Coastal Salt Marsh**

Northern coastal salt marsh typically contains pickleweed (*Salicornia* spp.), cordgrass (*Spartina* spp.), and saltgrass (*Distichlis spicata*). The nearest known occurrence of northern coastal salt marsh is approximately 8 miles northwest of the LRDP area near the mouth of Scott Creek (CNDDDB 2020). Salt marsh habitat is not present within the LRDP area.

### **Monterey Pine Forest**

Monterey pine forests are typically dominated by Monterey pine, but may also include other canopy species. Monterey pine is also considered a special-status plant species. The nearest known occurrence of Monterey pine forest habitat is approximately 11 miles northwest of the LRDP area (CNDDDB 2020). While it is possible that Monterey pine trees could occur within the LRDP area, no significant stands of this species have been identified within the LRDP area.

### **Northern Interior Cypress Forest**

Northern interior cypress forest habitat, or Santa Cruz cypress grove habitat, is dominated by Santa Cruz cypress (*Hesperocyparis abramsiana* var. *abramsiana*) and may be associated with other species including knobcone pine, ponderosa pine, Douglas fir, tan oak, Pacific madrone, coast live oak, and redwood. The nearest known occurrence of northern interior cypress forest is approximately 3.7 miles northwest of the LRDP area (CNDDDB 2020). While it is possible that Santa Cruz cypress trees could occur within the LRDP area, no significant stands of this species have been identified within the LRDP area.

### **Maritime Coast Range Ponderosa Pine Forest**

Maritime coast range ponderosa pine forest habitat is typically dominated by ponderosa pine, and may be associated with other canopy species, including tan oak, Douglas fir, and interior live oak. The nearest known occurrence of maritime coast range ponderosa pine forest habitat is approximately 1.4 miles west of the LRDP area within Henry Cowell Redwoods State Park (CNDDDB 2020). The LRDP area contains ponderosa pine trees; however, this species is not dominant in any of the forested habitat in the LRDP area.

### **Redwood Forest**

Redwood is typically the dominant species in redwood forest but may be co-dominant with other tree species (e.g., bigleaf maple, alder, Pacific madrone, California bay). Redwood typically makes up more than 50 percent relative cover in the tree canopy, with a lower tier of hardwood tree canopy cover. Approximately 860.4 acres of redwood forest habitat have been mapped in the LRDP area (Bay Area Open Space Council 2019). However, much of this mapped habitat may not meet the qualifications of the redwood forest sensitive natural community based on the species assemblages and degree of dominance of redwood within the habitat. The full description of this habitat can be found above under the "Vegetation Communities" section.

### **Coastal Prairie**

The LRDP area contains approximately 107.9 acres of coastal prairie habitat. The full description of this habitat can be found above under the "Vegetation Communities" section.



### Arroyo Willow Thickets

Arroyo willow (*Salix lasiolepis*) is typically the dominant species in this community and can be co-dominant with other tall shrubs or low trees (e.g., bigleaf maple, coyote brush). Arroyo willow typically makes up more than 50 percent of the relative cover in the shrub or tree canopy. The LRDP area contains approximately 5.2 acres of riparian woodland and scrub habitat, some of which is known to contain arroyo willow (Jones, pers. comm., 2020). Riparian habitat is considered sensitive, but riparian habitat dominated by arroyo willow may also qualify as this sensitive natural community.

### Black Cottonwood Forest and Woodland

Black cottonwood forest and woodland is dominated by black cottonwood but may be co-dominant with other tree species (e.g., bigleaf maple, alder [*Alnus* spp.], coast live oak, willow). Black cottonwood typically makes up more than 30 percent relative cover in the tree canopy. The LRDP area contains approximately 5.2 acres of riparian woodland and scrub habitat, which contains black cottonwood. Riparian habitat is considered sensitive, but riparian habitat dominated by black cottonwood may also qualify as this sensitive natural community.

### Shreve Oak Forest

Shreve Oak Forest is dominated by Shreve oak but may also include canopy species like big-leaf maple, tan oak, Douglas fir, coast live oak, redwood, and California bay. This community could be interspersed with areas identified as coast live oak habitat, redwood habitat, or other forested areas in the LRDP area.

### Purple Needlegrass Grassland

Purple needlegrass grassland is characterized by the presence of greater than 10 percent cover of purple needlegrass. This habitat may also include nodding needle grass (*Stipa cernua*), other needlegrass species (*Stipa* spp.), and melic grass species (*Melica* spp.), as well as nonnative grass and native and nonnative forbs. This habitat is likely interspersed with grassland and coastal prairie habitat within the Great Meadow, IAA and IAD, and the Marshall Fields complex in the LRDP area.

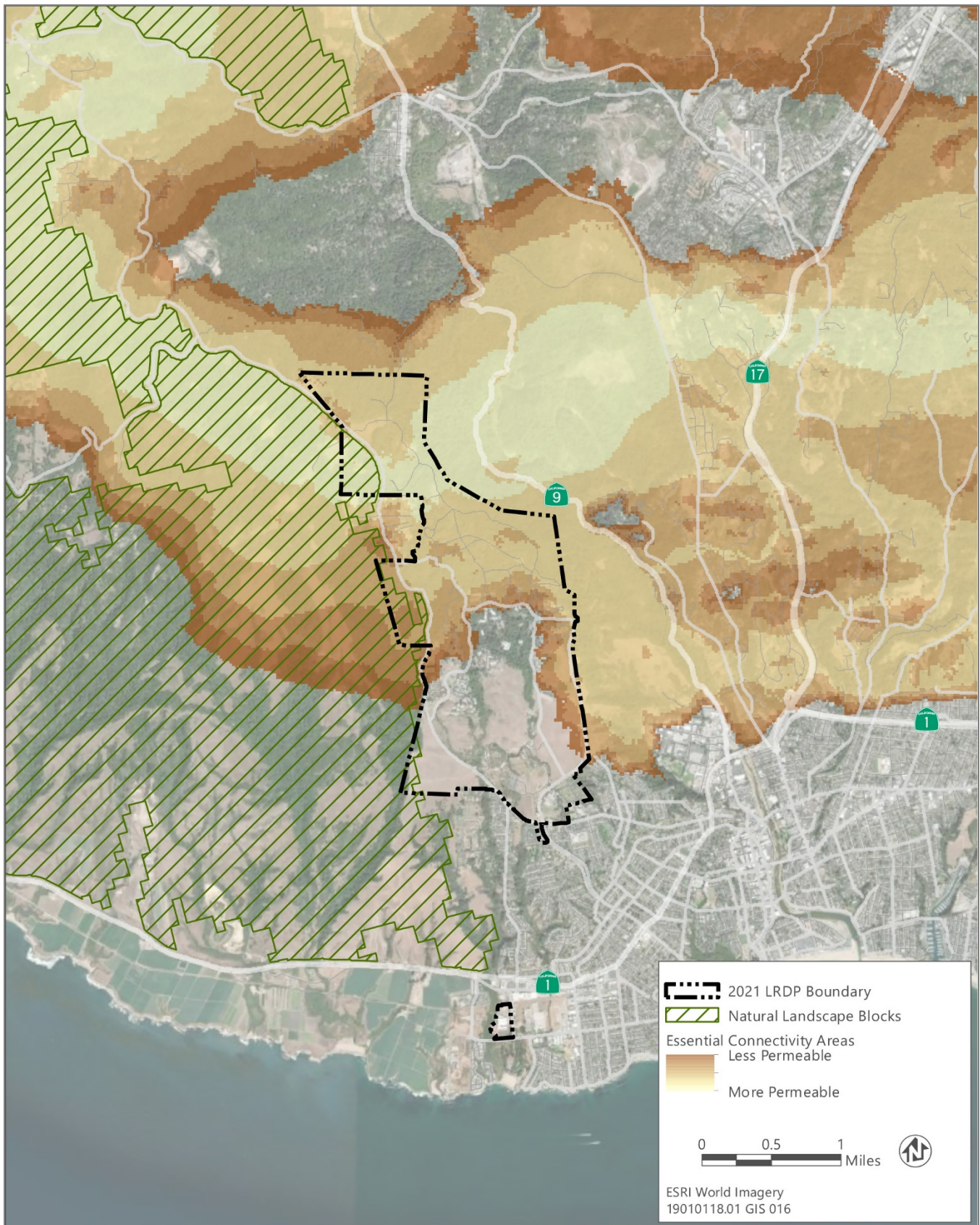
### California Bay Forest

California bay forest is typically dominated by California bay, but may also include coast live oak, Douglas fir, tanoak, redwood, and madrone. This habitat may be interspersed within coastal mixed hardwood habitat in the LRDP area.

## **Wildlife Movement Corridors**

The north campus portion of the LRDP area is predominately composed of relatively intact natural habitat, including redwood, coast live oak, coastal prairie, northern maritime chaparral, coastal mixed hardwood, and coyote brush habitat (Figure 3.5-2). Wilder Creek and several other intermittent and perennial streams run through the LRDP area (Figure 3.5-3). These features likely provide value as movement corridors for terrestrial and aquatic wildlife species and also provide connectivity with other natural habitats surrounding the LRDP area.

Some of the important areas for habitat connectivity in California were mapped as Essential Connectivity Areas (ECA) for the California Essential Habitat Connectivity Project, which was commissioned by the California Department of Transportation and CDFW with the purpose of making transportation and land-use planning more efficient and less costly, while helping reduce dangerous wildlife-vehicle collisions (Spencer et al. 2010). The ECAs were not developed for the purposes of defining areas subject to specific regulations by CDFW or other agencies. As shown in Figure 3.5-5, the LRDP area is surrounded on the north, west, and south by areas characterized as natural landscape blocks. The north campus portion of the LRDP area itself is considered an ECA, providing connectivity between these natural landscape blocks, and is generally "more permeable" relative to other areas outside of natural landscape blocks (see Figure 3.5-5). Most of the central campus and all of the lower campus portions of the LRDP area are not considered ECAs or natural landscape blocks due to the developed nature of those areas; however, these areas, especially riparian corridors, may still be used for wildlife movement to some degree.



Source: Data downloaded from CDFW in 2014

**Figure 3.5-5** Essential Connectivity Areas and Natural Landscape Blocks in the LRDP Area

## Wildlife Nursery Sites

Nursery sites are locations where fish or wildlife concentrate for hatching and/or raising young, such as nesting rookeries for birds (e.g., herons, egrets), spawning areas for native fish, fawning areas for mule deer (*Odocoileus hemionus*), and maternal roosts for bats. The LRDP area could contain a variety of these wildlife nursery sites. Deer fawning areas typically occur in chaparral, woodland, and riparian habitats which occur within the LRDP area. Several common bat species are known to occur within the LRDP area: big brown bat (*Eptesicus fuscus*), silver-haired bat (*Lasionycteris noctivagans*), hoary bat (*Lasiurus cinereus*), California myotis (*Myotis californicus*), long-eared myotis (*Myotis evotis*), little brown myotis (*Myotis lucifugus*), fringed myotis (*Myotis thysanodes*), long-legged myotis (*Myotis volans*), Yuma myotis (*Myotis yumanensis*), and Mexican free-tailed bat (*Tadarida brasiliensis*; UC Santa Cruz 2016b). Roost characteristics of common bat depend on the species, but may include specialized roosting habitat, such as caves, tree foliage, buildings, bridges, crevices, and tree hollows. Significant common bat roosts may also be present within habitat suitable for roosts in the LRDP area.

## Invasive Plant Species, Noxious Weeds, and Plant Pathogens

An invasive plant is one that is not native to a region, but rather is introduced, and tends to crowd out native vegetation and thereby adversely affect the wildlife that feeds on it. There are many invasive plant species in Santa Cruz County, and they occur throughout several different habitat types (Calflora 2020). Noxious weeds are plants that injure or cause damage to crops, livestock, or other agriculture and are designated by the US Department of Agriculture in accordance with the Plant Protection Act of 2000. Aggressive noxious weeds such as Scotch broom (*Cytisus scoparius*) and French broom (*Genista monspessulana*) can invade grasslands and exclude native grassland species. Invasive plant species such as English ivy (*Hedera helix*), Acacia (*Acacia* spp.), blue gum (*Eucalyptus globulus*), Pampas grass (*Cortaderia jubata*), giant reed (*Arundo donax*), and Himalayan blackberry (*Rubus armeniacus*) can invade forest or riparian habitats and exclude native understory species. Additionally, plant pathogens in the genus *Phytophthora*, including sudden oak death (*Phytophthora ramorum*) and *Phytophthora tentaculata*, pose a threat to native plant species. Sudden oak death is a forest disease that results in widespread dieback of oak trees in California and Oregon forests. Sudden oak death has been documented in many trees in Santa Cruz County, including one tree within the LRDP area (California Oak Mortality Task Force 2019).

## Environmentally Sensitive Habitat Areas

The Coastal Act defines ESHAs as “[a]ny area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could easily be disturbed or degraded by human activities and developments.” Therefore, to designate an ESHA, the following three elements must be evaluated:

- ▶ presence of species or habitats that are rare, or
- ▶ presence of species or habitats that are valuable, and
- ▶ sensitivity of species or habitat to human disturbance or degradation.

Portions of the LRDP area fall within the coastal zone, including the Westside Research Park and the area west of Empire Grade within the Main Residential Campus. Some habitats in these areas, including Mima mound wetlands within coastal prairie habitat and northern maritime chaparral habitat, may qualify as ESHAs. CCC considers species and habitats meeting the definitions of rare or especially valuable to be vulnerable to human disturbance or degradation because of historic losses and adverse effects of urbanization in coastal California. The CCA restricts development in ESHAs to only those uses dependent on the resource (e.g., hiking, educational signs and kiosks, research, and restoration), requires protection of ESHAs against any significant disruption of habitat values, and requires that development adjacent to ESHAs be designed to avoid degradation of the ESHAs and be compatible with continuance of habitat and recreation areas. Development setbacks are required and vary depending on the resource and type and intensity of disturbance but are commonly between 50 and 300 feet.

### 3.5.3 Environmental Impacts and Mitigation Measures

#### SIGNIFICANCE CRITERIA

Thresholds of significance are based on Appendix G of the State CEQA Guidelines. LRDP implementation would result in a significant impact on biological resources if it would:

- ▶ have a substantial adverse effect, either directly or through habitat modification, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS;
- ▶ have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by CDFW or USFWS;
- ▶ have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- ▶ interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- ▶ conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- ▶ conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.

#### ANALYSIS METHODOLOGY

This impact evaluation is based on review of existing databases that address biological resources in the vicinity of the LRDP area, aerial photographs, and reports regarding biological resource surveys in the LRDP area, as described above. The impact evaluation focuses on the potential for impacts on special-status species, sensitive natural communities, state or federally protected wetlands, migratory wildlife corridors or native wildlife nursery sites, and conflict with local policies, ordinances, or habitat conservation plans.

It is assumed that approximately 223 acres of natural vegetation communities (i.e., excluding urban/developed areas) and approximately 155 acres of urban/developed areas could be developed/redeveloped within the LRDP area as a result of 2021 LRDP implementation (Table 3.5-4). The acreages presented in Table 3.5-4 were derived by overlaying envisioned development areas and the vegetation communities in the LRDP area, as shown in Figure 3.5-6. Table 3.5-4 also identifies the relative percentage of potential impact acreage (by vegetation community) compared to total acreage of each vegetation community (as shown in Table 3.5-1) within the LRDP area that could be affected by 2021 LRDP implementation. Because the envisioned development areas represent overall land use categories and because not all of the envisioned development acreage would likely be developed as part of 2021 LRDP implementation, the impact acreages identified in Table 3.5-4 are considered to be conservative.

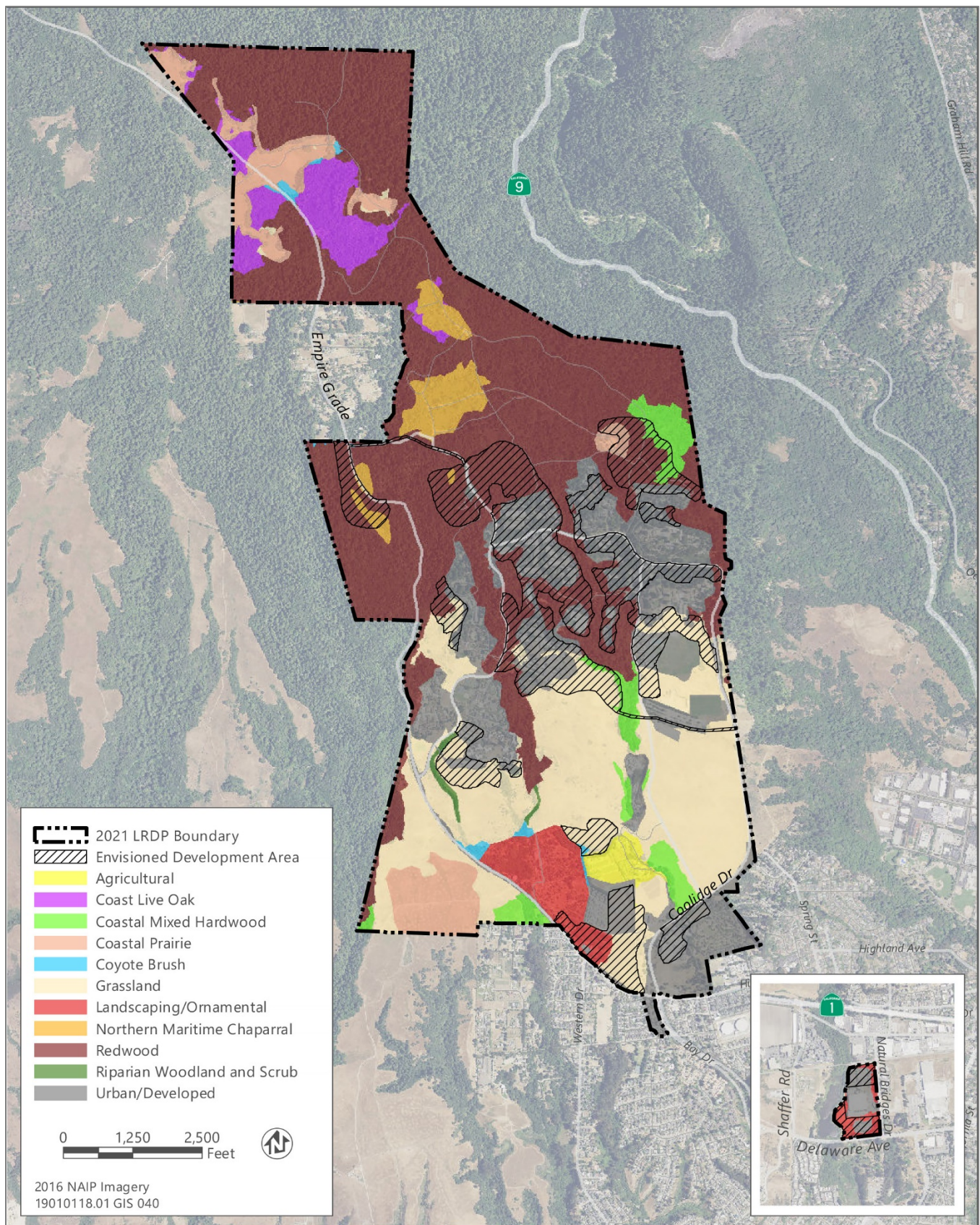
Due to the programmatic nature of this impact evaluation and the fact that focused surveys of future development sites under the 2021 LRDP would be required to verify habitat conditions in subsequent years during implementation of the 2021 LRDP, the envisioned impact acreages for each vegetation community are used as a proxy to assess potential impacts and the magnitude of impacts on wildlife and plant species associated with these communities. Vegetation community associations are provided for each special-status species or group of species (e.g., special-status plants) in this impact evaluation. Additional habitat assessments are provided for two special-status wildlife species: California tiger salamander and Ohlone tiger beetle.

**Table 3.5-4 Impact Acreage for Natural Vegetation Communities and Urban/Developed Areas in the LRDP Area from Implementation of the 2021 LRDP**

Vegetation Community	Impact Acreage	Impact Acreage as Percent of Total Vegetation Community Acreage within LRDP Area
Redwood	119.1	14%
Grassland	67.9	17%
Landscaping/Ornamental	15.7	25%
Coastal Mixed Hardwood	9.2	15%
Northern Maritime Chaparral	5.6	10%
Coastal Prairie	4.3	4%
Coyote Brush	0.5	7%
Agricultural	0.4	2%
Riparian Woodland and Scrub	0.1	2%
<b>Total Natural Vegetation Community Impact Acreage</b>	<b>222.8</b>	<b>-</b>
Urban/Developed	155.2	38%
<b>Total Impact Acreage</b>	<b>378</b>	<b>-</b>

Note: Table excludes urban/developed land cover type

Source: Data compiled by Ascent Environmental in 2020



Source: data downloaded from the Bay Area Open Space Council in 2019; adapted by Ascent Environmental in 2020

**Figure 3.5-6** Envisioned Development Areas Overlay on Vegetation Communities in the LRDP Area

## IMPACTS AND MITIGATION MEASURES

### Impact 3.5-1: Result in Disturbance or Loss of Special-Status Plant Species

Potential land use conversion and development as part of implementation of the 2021 LRDP could result in disturbance to or loss of several special-status plant species if they are present. Additionally, development under the 2021 LRDP could result in introduction or spread of invasive plants during vegetation removal or ground disturbance, which could result in exclusion of special-status plants. Because the loss of special-status plants could substantially affect the abundance, distribution, and viability of local and regional populations of these species, this would be a **potentially significant** impact.

Table 3.5-2 provides a list of the special-status plant species that may occur or are known to occur within the LRDP area. Seven special-status plant species are known to occur within the LRDP area: Santa Cruz manzanita, deceiving sedge (*Carex saliniformis*), Point Reyes horkelia (*Horkelia marinensis*), marsh microseris (*Microseris paludosa*), San Francisco popcornflower (*Plagiobothrys diffusus*), Santa Cruz clover (*Trifolium buckwestiorum*), and Pacific Grove clover (*Trifolium polyodon*) (CNDDDB 2020, CNPS 2020, Neubauer 2013, UC Santa Cruz 2005a). Twenty-eight additional special-status species may occur within the LRDP area:

- ▶ Blasdale's bent grass (*Agrostis blasdalei*)
- ▶ Bent-flowered fiddleneck (*Amsinckia lunaris*)
- ▶ Santa Cruz Mountains pussypaws (*Calyptridium parryi* var. *hesseae*)
- ▶ Bristly sedge (*Carex comosa*)
- ▶ Monterey spineflower (*Chorizanthe pungens* var. *pungens*)
- ▶ Scotts Valley spineflower (*Chorizanthe robusta* var. *hartwegii*)
- ▶ Robust spineflower (*Chorizanthe robusta* var. *robusta*)
- ▶ San Francisco collinsia (*Collinsia multicolor*)
- ▶ Tear drop moss (*Dacryophyllum falcifolium*)
- ▶ Minute pocket moss (*Fissidens pauperculus*)
- ▶ Vaginulate grimmia (*Grimmia vaginulata*)
- ▶ Short-leaved evax (*Hesperevax sparsiflora* var. *brevifolia*)
- ▶ Santa Cruz cypress
- ▶ Butano Ridge cypress (*Hesperocyparis abramsiana* var. *butanoensis*)
- ▶ Santa Cruz tarplant (*Holocarpha macradenia*)
- ▶ Arcuate bush-mallow (*Malacothamnus arcuatus*)
- ▶ Mt. Diablo cottonweed (*Micropus amphiboles*)
- ▶ Northern curly-leaved monardella (*Monardella sinuata* ssp. *nigrescens*)
- ▶ Woodland woollythreads (*Monolopia gracilens*)
- ▶ Kellman's bristle moss (*Orthotrichum kellmanii*)
- ▶ Dudley's lousewort (*Pedicularis dudleyi*)
- ▶ Santa Cruz Mountains beardtongue (*Penstemon rattanii* var. *kleei*)
- ▶ White-rayed pentachaeta (*Pentachaeta bellidiflora*)
- ▶ Monterey pine (*Pinus radiata*)
- ▶ White-flowered rein orchid (*Piperia candida*)
- ▶ Choris' popcornflower (*Plagiobothrys chorisianus* var. *chorisianus*)
- ▶ San Francisco champion (*Silene verecunda* ssp. *verecunda*)
- ▶ Santa Cruz microseris (*Stebbinsoseris decipiens*)

Implementation of the 2021 LRDP would result in development of approximately 378 acres of land within the LRDP area, approximately 38 percent of which would occur within urban/developed land cover types (Table 3.5-4, Figure 3.5-6). Although it is possible that some special-status plants could occur within certain previously developed areas (e.g., areas with ruderal grassland), these species are primarily associated with natural vegetation communities, including coastal prairie, woodland, forest, grassland, chaparral, and wetlands (Table 3.5-2). Most of the known occurrences of special-status plant species within the LRDP area are located in north campus within the Marshall Fields complex, where no development is proposed (Table 3.5-2). Additionally, planned development would occur

within approximately 16 acres of landscaping/ornamental habitat and approximately 0.4 acre of agricultural habitat, which would provide only marginal habitat for special-status plant species (Table 3.5-4). Because a large proportion of planned development would occur within areas where special-status plants are unlikely to occur, much of the anticipated development under the 2021 LRDP would not result in adverse effects on these species or special-status plant habitat.

As presented in Table 3.5-4 and Figure 3.5-6, some of the proposed development under the 2021 LRDP would occur within natural vegetation communities where special-status plants could potentially occur, including redwood, grassland, coastal mixed hardwood, northern maritime chaparral, coastal prairie, coyote brush, and riparian woodland and scrub. Implementation of projects under the 2021 LRDP may include ground disturbance, vegetation removal, and conversion of habitat within these natural vegetation communities. As a result, direct loss of special-status plants or indirect damage could occur through trampling or damage to root systems of these species, if present. Additionally, implementation of projects under the 2021 LRDP could result in inadvertent introduction or spread of nonnative plants which could result in adverse effects to special-status plants and special-status plant habitats through competition or degradation of habitat. This would be a **potentially significant** impact.

## Mitigation Measures

### Mitigation Measure 3.5-1a: Conduct Project-Level Biological Reconnaissance Sensitive Species and Habitats Survey

During the early planning stages of projects under the 2021 LRDP, the following measure shall apply:

- ▶ A data review and biological reconnaissance survey will be conducted within a particular project site by a qualified biologist prior to project activities (e.g., ground disturbance, vegetation removal, staging, construction) and will be conducted no more than one year prior to project implementation. The qualified biologist must be familiar with the life histories and ecology of species in Santa Cruz County and must have experience conducting field surveys of relevant species or resources, including protocol-level surveys for individual species, if applicable. The data reviewed will include the biological resources setting, species tables, and habitat information in this EIR. It will also include review of the best available, current data for the area, including vegetation mapping data, species distribution/range information, CNDDDB, CNPS Inventory of Rare and Endangered Plants of California, consultation with appropriate campus experts (e.g. Campus Natural Reserve Manager) to obtain information on biological resources that may not be captured in other databases, relevant Biogeographic Information and Observation System (BIOS) queries, and relevant general and regional plans. BIOS is a web-based system that enables the management and visualization of biogeographic data collected by CDFW and partner organizations. The qualified biologist will assess the habitat suitability of the project site for all special-status plant and wildlife species as well as sensitive habitats identified as having potential to occur in the LRDP area (refer to Section 3.5.2, "Environmental Setting"), and will identify any wildlife nursery sites (e.g., heron rookeries, bat maternity roosts, monarch butterfly overwintering colonies, deer fawning areas) within the LRDP area and potential ESHAs within project sites that fall within the coastal zone. The qualified biologist will also conduct a preliminary delineation of sensitive habitats (e.g., wetlands, streams, seeps, sensitive natural communities, ESHAs) within the project site. The biologist will provide a report to UC Santa Cruz with evidence to support a conclusion as to whether special-status species and sensitive habitats are present or are likely to occur within the project site.
- ▶ If the reconnaissance survey identifies no potential for special-status plant, wildlife species, or sensitive habitats to occur, UC Santa Cruz will not be required to apply any additional mitigation measures under Impact 3.5-1 through 3.5-4.
- ▶ If the qualified biologist determines that there is potential for special-status species or sensitive habitats to be present within the project site, the appropriate biological mitigation measures, identified herein shall be implemented.



### Mitigation Measure 3.5-1b: Conduct Special-Status Plant Surveys and Implement Avoidance Measures and Mitigation

If it is determined through implementation of Mitigation Measure 3.5-1a that habitat suitable for special-status plant species is present within a particular project site, the following measures shall be implemented:

- ▶ Prior to implementation of project activities and during the blooming period for the special-status plant species with potential to occur in a particular project site, as determined during implementation of Mitigation Measure 3.5-1a, a qualified botanist will conduct protocol-level surveys for special-status plants within the project site following survey methods from CDFW's *Protocols for Surveying and Evaluating Impacts on Special-Status Native Plant Populations and Natural Communities* (CDFW 2018 or most recent version). The qualified botanist will: 1) be knowledgeable about plant taxonomy, 2) be familiar with plants of the Santa Cruz region, including special-status plants and sensitive natural communities, 3) have experience conducting floristic botanical field surveys as described in CDFW 2018, 4) be familiar with the *California Manual of Vegetation* (Sawyer et al. 2009 or current version, including updated natural communities data at <http://vegetation.cnps.org/>), and 5) be familiar with federal and state statutes and regulations related to plants and plant collecting.
- ▶ If special-status plants are not found, the botanist will document the findings in a report to UC Santa Cruz, and no further mitigation will be required.
- ▶ If special-status plant species are found, the plant will be avoided completely, if feasible (i.e., project objectives can still be met). This may include establishing a no-disturbance buffer around the plants and demarcation of this buffer by a qualified biologist or botanist using flagging or high-visibility construction fencing. The size of the buffer will be determined by the qualified biologist or botanist and will be large enough to avoid direct or indirect impacts on the plant.

**Table MM3.5-1 Normal Blooming Period for Special-Status Plants That are Known to Occur or May Occur within the LRDP area**

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Blasdale's bent grass					X	X	X					
Bent-flowered fiddleneck			X	X	X	X						
Santa Cruz manzanita	X	X	X	X	X						X	X
Santa Cruz Mountains pussypaws					X	X	X	X				
Bristly sedge					X	X	X	X	X	X	X	X
Deceiving sedge						X						
Monterey spineflower				X	X	X						
Scott's Valley spineflower				X	X	X	X					
Robust spineflower				X	X	X	X	X	X			
San Francisco collinsia			X	X	X							
Minute pocket moss <sup>1</sup>	-	-	-	-	-	-	-	-	-	-	-	-
Short-leaved evax			X	X	X	X						
Santa Cruz cypress <sup>1</sup>	-	-	-	-	-	-	-	-	-	-	-	-
Butano Ridge cypress <sup>1</sup>	-	-	-	-	-	-	-	-	-	-	-	-
Santa Cruz tarplant						X	X	X	X	X		
Point Reyes horkelia					X	X	X	X	X			
Arcuate bush-mallow				X	X	X	X	X	X			
Mt. Diablo cottonweed			X	X	X							
Marsh microseris				X	X	X						
Northern curly-leaved monardella					X	X	X					
Woodland woolythreads			X	X	X	X	X					

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Kellman's bristle moss	X	X										
Dudley's lousewort				X	X	X						
Santa Cruz Mountains beardtongue					X	X						
White-rayed pentachaeta			X	X	X							
Monterey pine <sup>1</sup>	-	-	-	-	-	-	-	-	-	-	-	-
White-flowered rein orchid					X	X	X	X	X			
Choris' popcornflower			X	X	X	X						
San Francisco popcornflower			X	X	X	X						
San Francisco campion			X	X	X	X						
Santa Cruz microseris				X	X							
Santa Cruz clover				X	X	X	X	X	X	X		
Pacific Grove clover				X	X	X						

<sup>1</sup> Non-blooming bryophyte or gymnosperm species

Source: Data compiled by Ascent Environmental in 2020; CNPS 2020

- ▶ If special-status plants are found during special-status plant surveys and cannot be avoided, UC Santa Cruz shall, in consultation with CDFW or USFWS as appropriate depending on the particular species, develop and implement a site-specific mitigation strategy to achieve no net loss of occupied habitat or individuals. Mitigation measures shall include, at a minimum, preserving and enhancing existing populations, establishing populations through seed collection or transplantation from the site that is to be affected, and/or restoring or creating habitat in sufficient quantities to achieve no net loss of occupied habitat or individuals. Potential mitigation sites could include suitable locations within or outside of the LRDP area, with a preference for on-site mitigation. Habitat and individual plants lost shall be mitigated at a minimum 1:1 ratio, considering acreage as well as function and value. Success criteria for preserved and compensatory populations will include:
  - The extent of occupied area and plant density (number of plants per unit area) in compensatory populations will be equal to or greater than the affected occupied habitat.
  - Compensatory and preserved populations will be self-producing. Populations will be considered self-producing when:
    - plants reestablish annually for a minimum of five years with no human intervention such as supplemental seeding; and
    - reestablished and preserved habitats contain an occupied area and flower density comparable to existing occupied habitat areas in similar habitat types in the project vicinity.
    - If off-site mitigation includes dedication of conservation easements, purchase of mitigation credits, or other off-site conservation measures, the details of these measures will be included in the mitigation plan, including information on responsible parties for long-term management, conservation easement holders, long-term management requirements, success criteria such as those listed above and other details, as appropriate to target the preservation of long term viable populations.

**Mitigation Measure 3.5-1c: Implement Measures to Avoid Introduction or Spread of Invasive Plant Species and Plant Pathogens**

The following measures shall be implemented prior to vegetation removal and ground disturbance activities to avoid the introduction or spread of plants classified as invasive plant species by the California Invasive Plant Council and plant pathogens including Sudden Oak Death:

- ▶ UC Santa Cruz shall develop educational information (e.g., brochures, pamphlets) regarding invasive plants and Sudden Oak Death, the implication of the spread of invasive plants and plant pathogens, and proper sanitation practices to prevent the spread of invasive plants and plant pathogens. Construction crews and crews conducting vegetation removal will be provided with this information and instruction from a qualified professional (e.g., arborist, biologist) prior to working in infested or potentially infested areas and will be required to abide by the sanitation practices therein.
- ▶ Prior to work within areas with species susceptible to Sudden Oak Death, UC Santa Cruz shall retain a qualified professional (e.g., arborist, biologist) who will assess the risk of project activities and will identify and implement measures to reduce or avoid the risk of pathogen spread, including quarantine areas and proper measures for disposal of infested materials (e.g., branches, split wood, wood chips).
- ▶ Sanitation and prevention measures implemented by UC Santa Cruz or by contractors as specified in contract specifications to reduce or avoid the risk of pathogen spread or proliferation of invasive plant species shall include, but not be limited to, the following and will be further developed and updated based on the best available science and project-specific conditions:
  - Crews that will be working in infested or potentially infested areas will be provided with or required to carry sanitation kits. Sanitation kits will contain the following: Chlorine bleach [10/90 mixture bleach to water] or Clorox Clean-up or Lysol, scrub brush, metal scraper, boot brush, and plastic gloves.
  - Shoes, pruning gear, and other equipment will be sanitized using the above-mentioned materials before and after working in areas with species susceptible to Sudden Oak Death.
  - Clothing, footwear, and equipment used during project activities will be cleaned of soil, seeds, vegetation, or other debris or seed-bearing material before entering the project site or when leaving an area with infestations of invasive plants and noxious weeds.
  - Heavy equipment and other machinery used in areas with infestations of invasive plant species or Sudden Oak Death will be inspected for the presence of invasive species before use on the project site and will be cleaned before entering the site, to reduce the risk of introducing invasive plant species or plant pathogens.
  - Equipment will be staged in areas free of invasive plant infestations.

### Significance after Mitigation

Implementation of Mitigation Measures 3.5-1a, 3.5-1b, and 3.5-1c would reduce significant impacts on special-status plants to a **less-than-significant** level by requiring reconnaissance-level surveys of projects under the 2021 LRDP to determine the likelihood of presence of special-status plants, protocol-level surveys for special-status plants if determined to be likely to occur, implementation of avoidance measures and compensation for impacts on special-status plants, and avoidance of the introduction or spread of invasive plants and plant pathogens, like Sudden Oak Death.

### **Impact 3.5-2: Result in Disturbance to or Loss of Special-Status Wildlife Species and Habitat**

Implementation of the 2021 LRDP would include land use conversion and development activities including ground disturbance, vegetation removal, and overall conversion of wildlife habitat, which could result in disturbance, injury, or mortality of several special-status wildlife species if present, reduced breeding productivity of these species, and loss of species habitat. This would be a **potentially significant** impact.

Table 3.5-3 provides a list of the special-status wildlife species that may occur or are known to occur within the LRDP area. Nineteen special-status wildlife species have been previously documented in the LRDP area: California giant salamander (*Dicamptodon ensatus*), California red-legged frog, foothill yellow-legged frog (*Rana boylei*), Santa Cruz black salamander (*Aneides niger*), southwestern pond turtle (*Actinemys pallida*), Bryant's savannah sparrow (*Passerculus sandwichensis alaudinus*), burrowing owl (*Athene cunicularia*), olive-sided flycatcher (*Contopus cooperi*), white-tailed kite (*Elanus leucurus*), Dolloff cave spider (*Meta dolloff*), Empire Cave amphipod (*Stygobromus imperialis*), Empire Cave pseudoscorpion (*Fissilicreagris imperialis*), MacKenzie's Cave amphipod (*Stygobromus mackenziei*),

monarch butterfly - California overwintering population (*Danaus plexippus* pop. 1), Santa Cruz telemid spider (*Telema* sp.), Ohlone tiger beetle, American badger (*Taxidea taxus*), mountain lion (*Puma concolor*), and San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*), (Jones, pers. comm., 2020, CNDDDB 2020, UC Santa Cruz 2005a, Santa Cruz Puma Project 2020). Sixteen additional special-status wildlife species may occur within the LRDP area:

- ▶ Coast horned lizard (*Phrynosoma blainvillii*)
- ▶ American peregrine falcon (*Falco peregrinus anatum*; breeding)
- ▶ Bald eagle (*Haliaeetus leucocephalus*; breeding)
- ▶ Black swift (*Cypseloides niger*)
- ▶ Golden eagle (*Aquila chrysaetos*; breeding)
- ▶ Loggerhead shrike (*Lanius ludovicianus*)
- ▶ Northern harrier (*Circus hudsonius*; breeding)
- ▶ Purple martin (*Progne subis*)
- ▶ Tricolored blackbird (*Agelaius tricolor*)
- ▶ Vaux's swift (*Chaetura vauxi*)
- ▶ Yellow warbler (*Setophaga petechia*)
- ▶ Yellow-breasted chat (*Icteria virens*)
- ▶ Pallid bat (*Antrozous pallidus*)
- ▶ Ringtail (*Bassariscus astutus*)
- ▶ Townsend's big-eared bat (*Corynorhinus townsendii*)
- ▶ Western red bat (*Lasiurus blossevillii*)

Implementation of the 2021 LRDP would result in development of approximately 378 acres of land within the LRDP area, approximately 41 percent of which would occur within urban/developed land cover types (Table 3.5-4, Figure 3.5-6). Although it is possible that some special-status wildlife species could occur within certain previously developed areas (e.g., nesting raptors within landscape trees, burrowing owls within ruderal grassland areas), these species are primarily associated with natural vegetation communities, including coastal prairie, woodland, forest, grassland, chaparral, streams, and wetlands (Table 3.5-3). Most of the known occurrences of special-status plant species within the LRDP area are located in north campus within the Marshall Fields complex, other portions of the Campus Natural Preserve, caves, grassland and coastal prairie habitat in lower campus, or in the UC Santa Cruz Arboretum and Botanic Garden, where little or no development is proposed (Table 3.5-3). Because a large proportion of planned development would occur within areas where special-status wildlife species are unlikely to occur, that majority of development within the envisioned development areas of the 2021 LRDP would not result in adverse effects on these species or special-status wildlife habitat.

As presented in Table 3.5-4 and Figure 3.5-6, some of the proposed development under the 2021 LRDP would occur within natural vegetation communities where special-status wildlife species could potentially occur, including redwood, grassland, coastal mixed hardwood, northern maritime chaparral, coastal prairie, coyote brush, and riparian woodland and scrub. Potential impacts on special-status wildlife species with potential to occur in the LRDP area are described below.

### California Red-Legged Frog

California red-legged frog is listed as threatened under ESA and is a CDFW species of special concern. California red-legged frog occurs along the Coast Ranges from Mendocino County south to Los Angeles County, and in portions of the Sierra Nevada and Cascade Ranges (CDFW 2008). This species is most abundant within the inner Coast Ranges from Point Reyes, Marin County to southern Santa Barbara County, and within eastern Contra Costa and Alameda Counties (Thomson et al. 2016). Habitat suitable for California red-legged frog is typically characterized by aquatic breeding area (e.g., pools within streams and creeks, ponds, marshes, stock ponds) within a matrix of riparian and upland refugia and dispersal habitat (USFWS 2002b). Adult frogs are nearly always associated with permanent bodies of water (Amphibiaweb 2020). During rainy weather, California red-legged frogs may move overland through upland habitat; however, in general, the species is rarely observed far from water (USFWS 2002b).

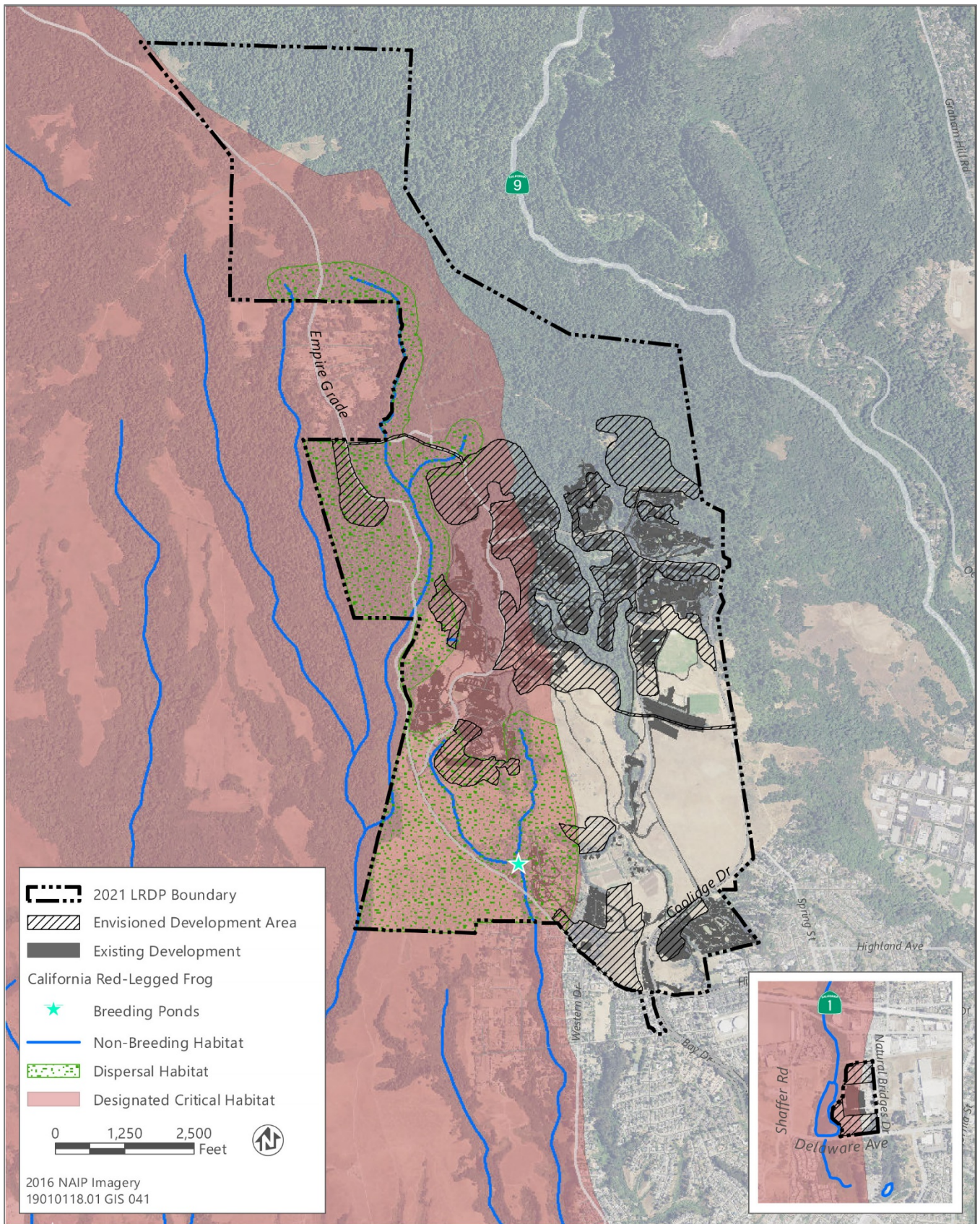
California red-legged frog is known to occur within numerous locations in the southwestern portion of the LRDP area (e.g., within Moore Creek), and is known to breed in the Arboretum Pond (Biosearch Environmental Consulting 2020, CNDDDB 2020). No other breeding habitat is known within the LRDP area (Biosearch Environmental Consulting 2020). There are several known occurrences of California red-legged frog within 1 mile of the LRDP area, and the nearest

breeding pond outside of the LRDP area is in Upper Dairy Gulch at the Wilder Sand Quarry, approximately 1.2 miles southwest of the LRDP area (Biosearch Environmental Consulting 2020).

Adult and juvenile California red-legged frog are known to travel through upland habitat (e.g., riparian, woodland, grassland) to move between breeding and nonbreeding sites (e.g., other ponds, deep pools in streams, moist and cool riparian understory, burrows) for access to upland refugia and foraging habitat, or to disperse to new breeding locations. The LRDP area contains upland refugia and dispersal habitat potentially suitable for the species within grasslands, coastal prairie, redwood forest, coastal mixed hardwood, coast oak woodland, northern maritime and shrub, riparian woodland and scrub, and some urban/developed and landscaped areas that contain ruderal grassland (Biosearch Environmental Consulting 2020). Additionally, the LRDP area contains approximately 970 acres of federally designated critical habitat for California red-legged frog (Figure 3.5-4).

Studies have demonstrated that California red-legged frogs remain very close to breeding ponds during the nonbreeding season and typically do not move more than approximately 500 feet into upland refugia habitats (Bulger et al. 2003; Fellers and Kleeman 2007). All known California red-legged frog observations on the UC Santa Cruz campus have been within 300 feet of aquatic habitats (Biosearch Environmental Consulting 2020). However, during migration to other suitable ponds in the region, California red-legged frogs may disperse long distances from aquatic habitat (i.e., greater than 1,600 feet) and typically travel in straight lines irrespective of vegetation types and have been documented to move over 1.7 miles between aquatic habitat sites (Bulger et al. 2003). California red-legged frogs breeding within the Arboretum Pond are expected to migrate to aquatic habitat suitable for the species within and outside of the LRDP area because the Arboretum Pond is not perennial (Biosearch Environmental Consulting 2020). California red-legged frog migratory and dispersal movements from the Arboretum Pond to other aquatic habitats are expected to be primarily along Moore Creek both upstream and downstream, and overland to the southwest, west or northwest to aquatic habitats in the Wilder Creek watershed (Biosearch Environmental Consulting 2020, Figure 3.5-7). Movements to the east of the Arboretum pond are not as likely to occur due to the lack of aquatic habitat suitable for California red-legged frog in Jordan Gulch, the City of Santa Cruz, and the lower San Lorenzo River watershed, and the presence of developed areas which would likely impede movement (Biosearch Environmental Consulting 2020, Figure 3.5-7). Additionally, developed areas of the UC Santa Cruz campus contain numerous potential barriers to overland movements (e.g., buildings, retaining walls, decorative walls, parking lots, roads, paths), and while frogs may be able to cross roads, paths, and parking lots, the cumulative barriers and hazards presented by developed areas reduce the likelihood that California red-legged frogs would be present within these areas (Biosearch Environmental Consulting 2020).

Development of new land uses (e.g., buildings, impervious surfaces) under the 2021 LRDP is not planned within the UC Santa Cruz Arboretum and Botanic Garden, or within 500 feet of the Arboretum Pond, so project implementation is not expected to result in loss of breeding habitat for California red-legged frogs or impacts on individual California red-legged frogs while breeding in the Arboretum Pond. However, 2021 LRDP development is planned within grassland, redwood, and northern maritime chaparral habitats north and northwest of the Arboretum Pond near Empire Grade in lower and central campus, in areas that are likely used by California red-legged frogs for upland migration, dispersal, and refuge (Figure 3.5-6, Figure 3.5-7). Implementation of projects under the 2021 LRDP would include ground disturbance, vegetation removal, and land development in several habitats that may provide upland refugia and dispersal habitat suitable for California red-legged frog as described above (Table 3.5-4). These activities could result in loss of or injury to California red-legged frogs if present within upland refugia or dispersal habitat within the project site, as well as loss of habitat for the species. This would be a **potentially significant** impact.



Source: Data received from Biosearch Environmental Consulting in 2020

**Figure 3.5-7 Envisioned Development Areas Overlay of California Red-Legged Frog Potential Sensitive Habitat in the LRDP Area**

## Mitigation Measures

### Mitigation Measure 3.5-1a (above): Conduct Project-Level Biological Reconnaissance Sensitive Species and Habitats Survey

### Mitigation Measure 3.5-2a: Conduct Site-Specific Habitat Suitability Analysis for California Red-Legged Frog, Obtain Incidental Take Authorization through Consultation with USFWS, Implement Minimization Measures

If it is determined through implementation of Mitigation Measure 3.5-1a that aquatic or upland habitat determined to be suitable for California red-legged frog migration, dispersal, foraging, or refuge is present within a particular project site, the following measures shall be implemented during the planning stages for each individual project under the 2021 LRDP:

- ▶ A qualified biologist will conduct a site-specific habitat suitability verification analysis to confirm the likelihood of the species to be present. To be qualified, the biologist will: 1) be knowledgeable in California red-legged frog life history and ecology, 2) be able to correctly identify California red-legged frogs and habitats, 3) have experience conducting field surveys of relevant resources, 4) be knowledgeable about state and federal laws regarding the protection of special-status species, and 5) have experience using CDFW's CNDDDB. The habitat assessment will include, but will not be limited to:
  - Identification or verification of the vegetation communities present in the project site.
  - Consideration of known occurrences within the LRDP area;
  - Description of the project, including proposed project construction activities;
  - Analysis of the type and likelihood of impacts on California red-legged frog as a result of project implementation; and
  - Potential project modifications or additional measures that may avoid and minimize mortality, injury, and disturbance of California red-legged frog and habitat.
- ▶ Results of the site-specific habitat suitability verification analysis will be submitted to UC Santa Cruz for review and consideration.
- ▶ Based on the results of the site-specific habitat suitability verification analysis, a qualified biologist will determine if any of the following would occur: injury or mortality of California red-legged frog; or disturbance of individuals or adverse effects on California red-legged frog breeding, upland refugia, or dispersal habitat.
  - If a qualified biologist determines that the individual project would have no substantial adverse effect on red-legged frog or its habitat and would not result in any injury or mortality, implementation of that individual project may proceed.
  - For those areas where adverse modification of critical habitat or disturbance, injury, or mortality of California red-legged frog cannot be avoided, UC Santa Cruz shall, in consultation with USFWS, implement impact minimization for construction-related impacts (e.g., installation of exclusion fencing around the project construction site) and compensatory actions for habitat impacts, including purchase of credits at a conservation bank or creation of additional habitat at a minimum 1:1 mitigation ratio, as well as adaptive management<sup>1</sup> strategies to ensure long-term conservation of mitigation lands. No actions that could adversely affect California red-legged frog will be allowed if adverse effects would result, unless consultation with USFWS is completed and additional measures are implemented.

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<sup>1</sup> Adaptive management is defined as "...a decision process that promotes flexible decision making that can be adjusted in the face of uncertainties as outcomes from management actions and other events become better understood. Careful monitoring of these outcomes both advances scientific understanding and helps adjust policies or operations as part of an iterative learning process. Adaptive management also recognizes the importance of natural variability in contributing to ecological resilience and productivity. It is not a 'trial and error' process, but rather emphasizes learning while doing. Adaptive management does not represent an end in itself, but rather a means to more effective decisions and enhanced benefits. Its true measure is in how well it helps meet environmental, social, and economic goals, increases scientific knowledge, and reduces tensions among stakeholders" (Department of the Interior 2009).

To the extent the project may result in “take” of the species, UC Santa Cruz shall pursue incidental take coverage by either pursuing consultation and biological opinion under Section 7 of the federal ESA (where there is some federal nexus) or by developing an HCP, which would require authorization by USFWS under Section 10 of the ESA. Such an HCP could provide long-term conservation and incidental take coverage for species listed under ESA with potential to occur in the LRDP area: California red-legged frog and Ohlone tiger beetle. Typically, HCPs include the following:

- ▶ Measures that UC Santa Cruz will undertake to monitor, minimize, and mitigate for such impacts, the funding available to implement such measures, and the procedures to deal with unforeseen or extraordinary circumstances.
- ▶ Alternative actions to the taking analyzed by UC Santa Cruz, and the reasons why the alternatives were not adopted.
- ▶ Biological goals and objectives, which would define the expected biological outcome for each species covered by the HCP.
- ▶ Adaptive management, which includes methods for addressing uncertainty and also monitoring and feedback to biological goals and objectives.
- ▶ Monitoring for compliance, effectiveness, and effects.
- ▶ Permit duration which is determined by the time-span of the project and designed to provide the time needed to achieve biological goals and address biological uncertainty.

### **Significance after Mitigation**

Implementation of Mitigation Measures 3.5-1a and 3.5-2a would reduce potential impacts on California red-legged frog to a **less than significant** level by requiring reconnaissance-level surveys for projects under the 2021 LRDP to determine the likelihood of presence of California red-legged frogs or aquatic or upland habitat suitable for the species, a site-specific habitat suitability verification analysis for projects within habitat suitable for the species, incidental take authorization and implementation of minimization and compensatory measures if impacts on California red-legged frogs are unavoidable, and/or development of a comprehensive HCP to cover future impacts on California red-legged frogs.

### **California Giant Salamander, Foothill Yellow-Legged Frog, Santa Cruz Black Salamander**

California giant salamander and Santa Cruz black salamander are CDFW species of special concern, and the foothill yellow-legged frog west/central coast clade is listed as endangered under CESA. California giant salamander (Jones, pers. comm., 2020) and foothill yellow-legged frog (CNDDDB 2020) have been observed within aquatic habitat in Cave Gulch and its tributaries, as well as upland wet forest habitat near aquatic features within the LRDP. Additionally, paedomorphic California giant salamanders, or salamanders that have retained juvenile or larval characteristics, have been observed within cave habitats in the LRDP area, including Empire Cave, and it is suspected that these individuals may represent a distinct subspecies (UC Santa Cruz 2005a). Santa Cruz black salamander has been observed within redwood habitat near intermittent drainages in the LRDP area (Jones, pers. comm., 2020, CNDDDB 2020). Habitat potentially suitable for all of these species is present within or near aquatic habitat in the LRDP area and in associated upland areas (e.g., wet forests, under logs). Development under the 2021 LRDP is proposed within forested areas in upper and central campus and could occur within or adjacent to drainages or other wet areas that have not been mapped at a project level.

Implementation of projects under the 2021 LRDP may include ground disturbance, vegetation removal, and land development in natural vegetation communities potentially used by these species. These activities could result in loss of or injury to special-status amphibians if the species occur within the project site. Further, removal of habitat suitable for foothill yellow-legged frog would also be an adverse effect. This would be a **potentially significant** impact.

### **Mitigation Measures**

#### **Mitigation Measure 3.5-1a (above): Conduct Project-Level Biological Reconnaissance Sensitive Species and Habitats Survey**



### Mitigation Measure 3.5-2b: Conduct Preconstruction Surveys for Special-Status Amphibians and Implement Avoidance Measures

If it is determined through implementation of Mitigation Measure 3.5-1a that habitat suitable for California giant salamander, foothill yellow-legged frog, or Santa Cruz black salamander is present within a particular project site, the following measures shall be implemented no more than 48 hours prior to commencement of project activities (e.g., vegetation removal, ground disturbance, staging) of a project under the 2021 LRDP:

- ▶ A qualified biologist familiar with the life cycle of California giant salamander, foothill yellow-legged frog, and Santa Cruz black salamander will conduct preconstruction surveys within the project site. Preconstruction surveys for special-status amphibian species will be conducted throughout the project site and a 400-foot buffer around the project site. Surveys will consist of “walk and turn” surveys of areas beneath surface objects (e.g., rocks, leaf litter, moss mats, coarse woody debris) for salamanders, and visual searches for frogs. Preconstruction surveys will be conducted within the appropriate season to maximize potential for observation for each species, and appropriate surveys will be conducted for the applicable life stages (i.e., eggs, larvae, adults).
- ▶ If special-status amphibians are not detected during the preconstruction survey, the qualified biologist will submit a report summarizing the results of the survey to UC Santa Cruz, and further mitigation will not be required.
- ▶ If special-status amphibians are detected during the preconstruction survey, UC Santa Cruz shall, in consultation with CDFW, develop and institute, at a minimum, project design modifications (e.g., specific building materials and surfacing requirements), relocation of individual animals, installation of exclusionary fencing, and/or other measures recommended by CDFW as necessary to ensure that no injury to or mortality of these species would occur.
- ▶ If “take” of foothill yellow-legged frog under CESA is unavoidable, UC Santa Cruz shall seek and obtain an incidental take permit from CDFW and implement any additional measures necessary to minimize, compensate for, and fully mitigate impacts on foothill yellow-legged frog. These additional measures shall include, at a minimum, some combination of the following measures: installation of exclusion fencing around project sites, purchase of credits at a conservation bank, creation of additional habitat, and/or adaptive management strategies.

### Mitigation Measure 3.10-5a: Implement Procedures for Building on Karst Where Groundwater Is Encountered and Where Pressure Grouting Is Required

*(Refer to Section 3.10, “Hydrology and Water Quality”)*

#### Significance after Mitigation

Implementation of Mitigation Measures 3.5-1a, 3.5-2b, and 3.10-5a would reduce potential impacts on California giant salamander, foothill yellow-legged frog, and Santa Cruz black salamander to a **less than significant** level by requiring reconnaissance-level surveys for projects under the 2021 LRDP to determine the likelihood of presence of these species, focused surveys for these species if determined to be likely to occur, implementation of measures to avoid injury or mortality of the species if detected, incidental take authorization and providing habitat compensation to fully mitigate impacts on foothill yellow-legged frog (a listed species under CESA) if they are unavoidable, and implementation of measures to reduce impacts on karst cave ecosystems where paedomorphic California giant salamanders are known to occur.

#### **Southwestern Pond Turtle**

Southwestern pond turtle is a CDFW species of special concern. This species can be found in many different aquatic habitats, including ponds (natural or human-made), marshes, rivers, and irrigation ditches. Southwestern pond turtle uses upland habitat for basking and egg-laying. Upland habitat may include grasslands, scrub, or woodland habitats. Southwestern pond turtles are known to travel into uplands up to 0.3 mile (approximately 1,600 feet) from aquatic habitat (Reese and Welsh 1997). Southwestern pond turtles have been observed within the Arboretum Pond in the LRDP area (CNDDDB 2020). The additional aquatic resources within the LRDP area (e.g., perennial and intermittent streams, Wilder Creek) also provide potential habitat for this species.

Development (e.g., buildings, impervious surfaces) under the 2021 LRDP is not planned within the UC Santa Cruz Arboretum and Botanic Garden, or within 500 feet of the Arboretum Pond, so project implementation is not expected to adversely affect southwestern pond turtles that may be present in or near the Arboretum Pond or result in loss of breeding habitat suitable for the species. However, implementation of projects under the 2021 LRDP may include ground disturbance, vegetation removal, and land development in grassland, coastal prairie, riparian, and forested areas adjacent and up to approximately 1,600 feet from streams and drainages that may provide upland habitat suitable for southwestern pond turtle (Table 3.5-4). Any reduction in upland habitat that would be potentially suitable for the species within the LRDP area is expected to be marginal (e.g., due to existing impediments to travel) and insubstantial; however, construction activities within approximately 1,600 feet of streams and drainages could result in loss of or injury to southwestern pond turtle if present within the project site. This would be a **potentially significant** impact.

## Mitigation Measures

### Mitigation Measure 3.5-1a (above): Conduct Project-Level Biological Reconnaissance Sensitive Species and Habitats Survey

### Mitigation Measure 3.5-2c: Conduct Preconstruction Surveys for Southwestern Pond Turtle, Implement Avoidance Measures, and Relocate Individuals

If it is determined through implementation of Mitigation Measure 3.5-1a that aquatic or upland habitat suitable for southwestern pond turtle is present or that southwestern pond turtle was otherwise determined to be historically present within a particular project site, the following measures shall be implemented no more than 48 hours prior to commencement of project activities (e.g., vegetation removal, ground disturbance, staging) of a project under the 2021 LRDP:

- ▶ A qualified biologist familiar with the life history of southwestern pond turtle and experienced in performing surveys for southwestern pond turtle will conduct a focused survey of habitat suitable for the species within the project site. If aquatic habitat potentially suitable for the species is present within a project site (e.g., streams, ponds, drainages), upland habitat within approximately 1,600 feet of this aquatic habitat will also be surveyed. The qualified biologist will inspect the project site for southwestern pond turtles as well as suitable burrow habitat.
- ▶ If southwestern pond turtles are not detected during the focused survey, the qualified biologist will submit a report summarizing the results of the survey to UC Santa Cruz, and further mitigation will not be required.
- ▶ If southwestern pond turtles are detected, a no-disturbance buffer of at least 100 feet will be established around any identified nest sites or overwintering sites. A qualified biologist with an appropriate CDFW Scientific Collecting Permit that allows handling of reptiles will be present during initial ground disturbance activities and will inspect the project site before initiation of project activities. If southwestern pond turtles are detected, the qualified biologist will move the turtles downstream and out of harm's way.

### Significance after Mitigation

Implementation of Mitigation Measures 3.5-1a and 3.5-2c would reduce potential impacts on southwestern pond turtle to a **less-than-significant** level by requiring reconnaissance-level surveys for projects under the 2021 LRDP to determine the likelihood of presence of the species, focused surveys for the species if determined to be likely to occur, implementation of measures to avoid injury or mortality of southwestern pond turtles if detected, and relocation of individual turtles by a qualified biologist with an appropriate CDFW Scientific Collecting Permit.

## Coast Horned Lizard

Coast horned lizard is a CDFW species of special concern. Habitat suitable for this species typically contains some open areas with loose soil and scattered, low bushes for cover. Coast horned lizard has historically occurred on the UC Santa Cruz campus; however, the species has not been seen in recent years (Jones, pers. comm., 2020). Habitat potentially suitable for the species within the LRDP area includes northern maritime chaparral and coyote brush habitats (UC Santa Cruz 2016a). Proposed development within these vegetation communities would occur in north campus within northern maritime chaparral habitat along Empire Grade and Heller Drive and in lower campus within coyote brush habitat northeast of the UC Santa Cruz Arboretum and Botanic Garden (Figure 3.5-6). Proposed

development within northern maritime chaparral and coyote brush habitats accounts for approximately 2 percent of the total impact acreage in the LRDP area (Table 3.5-4).

Implementation of projects under the 2021 LRDP in the areas described above may include ground disturbance, vegetation removal, and land development in northern maritime chaparral and coyote brush habitats (Table 3.5-4). Although it is unlikely that coast horned lizard would be present within an individual project site because the species has not been detected in recent years, if present, these activities could result in loss of or injury to coast horned lizard. This would be a **potentially significant** impact.

## Mitigation Measures

### Mitigation Measure 3.5-1a (above): Conduct Project-Level Biological Reconnaissance Sensitive Species and Habitats Survey

### Mitigation Measure 3.5-2d: Conduct Preconstruction Surveys for Coast Horned Lizard, Implement Avoidance Measures, and Relocate Individuals

If it is determined through implementation of Mitigation Measure 3.5-1a that habitat suitable for coast horned lizard (e.g., chaparral, coyote brush) is present within a particular project site, the following measures shall be implemented no more than 48 hours prior to commencement of project activities (e.g., vegetation removal, ground disturbance, staging) of a particular project under the 2021 LRDP:

- ▶ A qualified biologist familiar with the life history of coast horned lizard and experienced in performing surveys for the species will conduct a focused visual survey of habitat suitable for the species within the project site, which will include walking linear transects of the project site.
- ▶ If coast horned lizards are not detected during the focused survey, the qualified biologist will submit a report summarizing the results of the survey to UC Santa Cruz, and further mitigation will not be required.
- ▶ If coast horned lizards are detected, a qualified biologist with an appropriate CDFW Scientific Collecting Permit that allows handling of reptiles will be present during initial ground disturbance activities and will inspect the project site before initiation of project activities. If coast horned lizards are detected, the qualified biologist will move the lizards into nearby habitat and out of harm's way.

### Significance after Mitigation

Implementation of Mitigation Measures 3.5-1a and 3.5-2d would reduce potential impacts on coast horned lizard to a **less-than-significant** level by requiring reconnaissance-level surveys for projects under the LRDP to determine the likelihood of presence of the species, focused visual surveys for the species if determined to be likely to occur, and relocation of individual lizards by a qualified biologist with an appropriate CDFW Scientific Collecting Permit, if detected.

## Burrowing Owl

Burrowing owl is a CDFW species of special concern. Burrowing owls have been observed within coastal prairie and grassland habitat in the LRDP area (CNDDDB 2020). Habitat suitable for burrowing owls is composed of grassland, including ruderal grassland and vacant lots, as well as shrubland where shrubs are sparse. Burrowing owls require habitat with sufficient burrows created by fossorial mammals, most commonly California ground squirrel (*Otospermophilus beecheyi*). The LRDP area contains grassland, coastal prairie, and chaparral habitat which may be suitable for this species, and several proposed development areas within central and lower campus overlap these vegetation communities (Figure 3.5-6)

Implementation of projects under the 2021 LRDP in areas that contain habitat suitable for burrowing owl may include ground disturbance, vegetation removal, and land development, including development on approximately 68 acres of grassland and 4 acres of coastal prairie habitat (Table 3.5-4). These activities could result in inadvertent disturbance, injury, or mortality of burrowing owl. If present, burrowing owls could be disturbed due to the presence of equipment and personnel and could be inadvertently injured or killed by heavy machinery or vehicles. Active burrows could be inadvertently crushed and destroyed, if present, potentially resulting in the loss of eggs or chicks. This would be a **potentially significant** impact.

## Mitigation Measures

### Mitigation Measure 3.5-1a (above): Conduct Project-Level Biological Reconnaissance Sensitive Species and Habitats Survey

### Mitigation Measure 3.5-2e: Conduct Protocol-Level Surveys for Burrowing Owl, Implement Avoidance Measures, and Compensate for Loss of Occupied Burrows

If it is determined through implementation of Mitigation Measure 3.5-1a that habitat suitable for burrowing owl is present within a project site, the following measures shall be implemented prior to and during construction of a particular project under the 2021 LRDP:

- ▶ A qualified biologist will conduct focused breeding and nonbreeding season surveys for burrowing owls in areas of habitat suitable for the species identified during the reconnaissance-level survey (e.g., ruderal grassland, successional grassland, scrub habitat with sparse shrub cover) on and within 1,500 feet of the project site. Surveys will be conducted before the start of project activities and in accordance with Appendix D of the *CDFW Staff Report on Burrowing Owl Mitigation* (CDFW 2012, or most current version) (CDFW Staff Report).
- ▶ If no occupied burrows are found, the qualified biologist will submit a report documenting the survey methods and results to UC Santa Cruz, and no further mitigation will be required.
- ▶ If an active burrow is found within 1,500 feet of pending construction activities that would occur during the nonbreeding season (September 1 through January 31), UC Santa Cruz shall establish and maintain a minimum protection buffer of 165 feet around the occupied burrow throughout construction. The protection buffer may be adjusted if, in consultation with CDFW, a qualified biologist determines that an alternative buffer will not disturb burrowing owl use of the burrow because of particular site features or other buffering measures. If occupied burrows are present that cannot be avoided or adequately protected with a no-disturbance buffer, a burrowing owl exclusion plan will be developed, as described in Appendix E of the CDFW Staff Report. Burrowing owls will not be excluded from occupied burrows until the project burrowing owl exclusion plan is approved by CDFW. The exclusion plan will include a compensatory habitat mitigation plan (see below).
- ▶ If an active burrow is found during the breeding season (February 1 through August 31), occupied burrows will not be disturbed and will be provided with a protective buffer at a minimum of 650 feet unless a qualified biologist verifies through noninvasive means that either: (1) the birds have not begun egg laying, or (2) juveniles from the occupied burrows are foraging independently and are capable of independent survival. The size of the buffer may be adjusted depending on the time of year and level of disturbance as outlined in the CDFW Staff Report. The size of the buffer may be reduced if a broad-scale, long-term, monitoring program acceptable to CDFW is implemented so that burrowing owls are not adversely affected. Once the fledglings are capable of independent survival, the owls can be evicted and the burrow can be destroyed per the terms of a CDFW-approved burrowing owl exclusion plan developed in accordance with Appendix E of CDFW Staff Report.
- ▶ If burrowing owls are evicted from burrows and the burrows are destroyed by implementation of project activities, UC Santa Cruz will mitigate the loss of occupied habitat in accordance with guidance provided in the CDFW Staff Report, which states that permanent impacts on nesting, occupied and satellite burrows, and burrowing owl habitat (i.e., grassland habitat with suitable burrows) will be mitigated such that habitat acreage and number of burrows are replaced through permanent conservation of comparable or better habitat with similar vegetation communities and burrowing mammals (e.g., ground squirrels) present to provide for nesting, foraging, wintering, and dispersal. UC Santa Cruz will retain a qualified biologist to develop a burrowing owl mitigation and management plan that incorporates the following goals and standards:
  - Mitigation lands will be selected based on comparison of the habitat lost to the compensatory habitat, including type and structure of habitat, disturbance levels, potential for conflicts with humans, pets, and other wildlife, density of burrowing owls, and relative importance of the habitat to the species throughout its range.
  - If feasible, mitigation lands will be provided adjacent or proximate to the project site so that displaced owls can relocate with reduced risk of injury or mortality. Feasibility of providing mitigation adjacent or proximate

to the project site depends on availability of sufficient habitat to support displaced owls that may be preserved in perpetuity.

- If habitat suitable for burrowing owl is not available for conservation adjacent or proximate to the project site, mitigation lands can be secured off-site and will aim to consolidate and enlarge conservation areas outside of planned development areas and within foraging distance of other conservation lands. Mitigation may be also accomplished through purchase of mitigation credits at a CDFW-approved mitigation bank, if available. Alternative mitigation sites and acreages may also be determined in consultation with CDFW.
- If burrowing owl habitat mitigation is completed through permittee-responsible conservation lands, the mitigation plan will include mitigation objectives, site selection factors, site management roles and responsibilities, vegetation management goals, financial assurances and funding mechanisms, performance standards and success criteria, monitoring and reporting protocols, and adaptive management measures (e.g., measures required if performance standards and success criteria are not met). Success will be based on the number of adult burrowing owls and pairs using the site and if the numbers are maintained over time. Measures of success, as suggested in the CDFW Staff Report, will include site tenacity, number of adult owls present and reproducing, colonization by burrowing owls from elsewhere, changes in distribution, and trends in stressors.

### Significance after Mitigation

While burrowing owls are unlikely to occur in much of the LRDP area, implementation of Mitigation Measures 3.5-1a and 3.5-2e would reduce potential impacts on burrowing owl to a **less-than-significant** level by requiring reconnaissance or protocol-level surveys for individual projects under the 2021 LRDP to confirm whether the species may occur and, if so, implementation of measures to avoid injury or mortality of burrowing owls and destruction of active burrows if detected, and compensation if burrows cannot be avoided.

### **American Peregrine Falcon, Bald Eagle, Black Swift, Bryant's Savannah Sparrow, Golden Eagle, Loggerhead Shrike, Northern Harrier, Olive-Sided Flycatcher, Purple Martin, Tricolored Blackbird, Vaux's Swift, White-Tailed Kite, Yellow Warbler, Yellow-Breasted Chat, and Other Native Nesting Birds**

Fourteen special-status bird species are known to or are likely to occur in the LRDP area. Of these bird species, American peregrine falcon, bald eagle, golden eagle, and white-tailed kite are fully protected under California Fish and Game Code. Bald eagles are also listed as endangered under CESA, and both bald and golden eagles are also protected under the Bald and Golden Eagle Protection Act. Tricolored blackbird is listed as threatened under CESA. Bryant's savannah sparrow, loggerhead shrike, northern harrier, olive-sided flycatcher, purple martin, Vaux's swift, yellow warbler, and yellow-breasted chat are CDFW species of special concern. Additionally, other raptor species (e.g., Cooper's hawk [*Accipiter cooperi*], red-tailed hawk [*Buteo jamaicensis*], red-shouldered hawk [*Buteo lineatus*]) and other native nesting birds are known to nest within the LRDP area, and these species and their nests are protected under California Fish and Game Code.

While black swift may forage within the LRDP area, there is no suitable nesting habitat in the LRDP area (e.g., ocean-facing ledges). Implementation of the 2021 LRDP would not result in significant loss of foraging habitat or a substantial change in the character of the foraging habitat within the LRDP area. Because 2021 LRDP implementation would not result in direct loss of black swifts or nests because nesting habitat is not present in the LRDP area, this species is not discussed further.

The 13 special-status bird species that could nest in the LRDP area could nest in a variety of different habitats. American peregrine falcon may nest on human-made structures (e.g., buildings) or ledges, if present within the LRDP area. Nesting habitat potentially suitable for bald eagle, golden eagle, olive-sided flycatcher, purple martin, Vaux's swift, and white-tailed kite is present within trees in forested areas of the LRDP area (e.g., redwood, coastal mixed hardwood, coast live oak, UC Santa Cruz Arboretum and Botanic Garden). Olive-sided flycatcher and white-tailed kite have been documented nesting within the LRDP area (Jones, pers. comm., 2020, CNDDDB 2020). Loggerhead shrikes nest within shrub habitat and could use northern maritime chaparral habitat or coyote brush habitat within the LRDP

area. Bryant's savannah sparrow has been observed nesting and breeding within IAA, Great Meadow, and East Meadow (Jones, pers. comm., 2020), and northern harrier nests within grassland habitat, which is present throughout the LRDP area. Yellow warbler, yellow-breasted chat, and tricolored blackbird are associated with streams, ponds, or other wet areas, and could nest within riparian habitat or emergent vegetation in the LRDP area.

Common native raptors and other birds could nest within habitat throughout the LRDP area, including forest habitat, shrub habitat, and grassland habitat. Although special-status birds and common raptors and other native birds often nest within habitat in natural vegetation communities, many common birds that build stick nests (e.g., mourning dove [*Zenaida macroura*], house finch [*Haemorhous mexicanus*]) often select nest sites on human-made structures. These species, and others, often utilize ledges, eaves, crevices, and nooks on buildings. Bird species, like barn swallows (*Hirundo rustica*) and cliff swallows (*Petrochelidon pyrrhonota*), use mud to build their nests and as a result can build them on a vertical surface, like walls of buildings. As a result, urban/developed areas and landscaping/ornamental areas may also provide habitat suitable for nesting birds.

Implementation of projects under the 2021 LRDP may include ground disturbance, vegetation removal (e.g., trees, shrubs), building demolition, and land development in habitats that include redwood, grassland, landscaping/ornamental (which may provide suitable nesting habitat for some bird species), coastal mixed hardwood, northern maritime chaparral, coastal prairie, coyote brush, agricultural, and riparian woodland scrub (Table 3.5-4). These activities could result in inadvertent disturbance, injury, or mortality of nesting birds. If present, nesting birds, including special-status species and common native species, could be disturbed due to the presence of and noise from equipment and personnel in close proximity of a nest, potentially resulting in nest abandonment. Active nests could be inadvertently removed if trees or shrubs containing these nests are pruned or removed, potentially resulting in loss of eggs or chicks. This would be a **potentially significant** impact.

## Mitigation Measures

### Mitigation Measure 3.5-1a (above): Conduct Project-Level Biological Reconnaissance Sensitive Species and Habitats Survey

### Mitigation Measure 3.5-2f: Conduct Focused Surveys for Special-Status Birds, Nesting Raptors, and Other Native Nesting Birds and Implement Protective Buffers

If it is determined through implementation of Mitigation Measure 3.5-1a that habitat suitable for nesting birds is present within a project site, the following measures shall be implemented prior to and during construction of a project under the 2021 LRDP:

- ▶ To minimize the potential for loss of special-status bird species, raptors, and other native birds, project activities (e.g., tree removal, other vegetation removal, ground disturbance, staging) will be conducted during the nonbreeding season (approximately September 1-January 31, as determined by a qualified biologist), if feasible. If project activities are conducted during the nonbreeding season, no further mitigation will be required.
- ▶ Within 14 days before the onset of project activities during the breeding season (approximately February 1 through August 31, as determined by a qualified biologist), a qualified biologist familiar with birds of California and with experience conducting nesting bird surveys will conduct focused surveys for special-status birds, other nesting raptors, and other native birds and will identify active nests within 0.5 mile of the project site.
- ▶ Because the nests of olive-sided flycatcher, yellow warbler, and yellow-breasted chat are small and difficult to find, occupancy of habitat suitable for these species (i.e., riparian woodland) for these species will be determined by a qualified biologist familiar with the life history of olive-sided flycatcher, yellow warbler, and yellow-breasted chat and with experience identifying the calls of these species. If olive-sided flycatcher, yellow warblers, or yellow-breasted chats are observed calling, exhibiting territorial displays, carrying nest materials, carrying prey, or other signs of breeding behavior, the habitat will be considered occupied. This protocol for determining occupancy of a nest may be extended to other bird species with nests that are difficult to locate at the discretion of the qualified biologist.
- ▶ Impacts on nesting birds will be avoided by establishing appropriate buffers around active nest sites identified during focused surveys to prevent disturbance to the nest. Project activity will not commence within the buffer areas

until a qualified biologist has determined that the young have fledged, the nest is no longer active, or reducing the buffer will not likely result in nest abandonment. An avoidance buffer of a minimum of 0.25 mile will be implemented for American peregrine falcon, bald eagle, golden eagle, and white-tailed kite, in consultation with CDFW. For other species, a qualified biologist will determine the size of the buffer for non-raptor nests after a site- and nest-specific analysis. Buffers typically will be 500 feet for raptors (other than special-status raptors) and 100 feet for non-raptor species. Factors to be considered for determining buffer size will include presence of natural buffers provided by vegetation or topography, nest height above ground, baseline levels of noise and human activity, species sensitivity, and proposed project activities. The size of the buffer may be adjusted if a qualified biologist determines that such an adjustment would not be likely to adversely affect the nest. Any buffer reduction for a special-status species will require consultation with CDFW. Periodic monitoring of the nest by a qualified biologist during project activities will be required if the activity has potential to adversely affect the nest, the buffer has been reduced, or if birds within active nests are showing behavioral signs of agitation (e.g., standing up from a brooding position, flying off the nest) during project activities, as determined by the qualified biologist.

- ▶ Removal of bald eagle and golden eagle nests is prohibited regardless of the occupancy status under the federal Bald and Golden Eagle Protection Act. If bald eagle or golden eagle nests are found during focused surveys, then the nest will not be removed.

### Significance after Mitigation

Implementation of Mitigation Measures 3.5-1a and 3.5-2f would reduce potential impacts on special-status birds, raptors, and other native nesting birds to a **less-than-significant** level by requiring reconnaissance-level surveys for projects under the 2021 LRDP to determine the likelihood of presence of nesting birds, focused surveys for the nesting birds if determined to be likely to occur, and implementation of measures to avoid disturbance, injury, or mortality of the species if nests are detected.

### **Cave Invertebrate Species**

Five invertebrate species are considered rare and potentially endemic to two caves (Empire Cave and Dolloff Cave) within or near the LRDP area: Dolloff Cave spider, Empire Cave amphipod, Empire Cave pseudoscorpion, MacKenzie's cave amphipod, and Santa Cruz telemid spider. These species are not officially listed under CESA or ESA or considered CDFW species of special concern; however, very little is known about these species, and the extent of their rarity has not been fully assessed. It is assumed that these species are rare, and human impacts on the cave systems in the LRDP area pose a threat to the persistence of these species.

Habitat suitable for these cave invertebrate species is present within Empire Cave in central campus near Empire Grade, and Dolloff Cave, which is outside of the LRDP area. Additional habitat suitable for these species may also be present in the central and lower campus portions of the LRDP area, where small cave entrances and sinkholes connect to larger subterranean cavities. Dolloff Cave spiders have also been observed within soil pits in redwood forest habitat in the upper campus portion of the LRDP area, suggesting that this species may occur in habitats other than caves (Krohn and Jones 2020). Caves within the LRDP area were formed through years of water runoff that has dissolved pockets of marble and created an underground network of small and large caverns. Although these cave invertebrate species have only been observed in certain cave habitats in the LRDP area, there have been no surveys of most of the caves and sinkholes in the LRDP area, so these species have potential to occur in other open karst caves in the LRDP area.

Implementation of projects under the 2021 LRDP may include ground disturbance in areas where karst caves are present underground and potential changes in water runoff patterns and water quality as a result of development that could cause increase runoff into underground cave systems through crevices or channels in bedrock, as discussed in Section 3.10 "Hydrology and Water Quality." Additionally, 2021 LRDP implementation may result in an increase in the number of students living on the campus and a potential increase in trespassing within cave ecosystems, which could result in increased disturbance to Empire Cave and special-status cave invertebrates. This would be a **potentially significant** impact.

## Mitigation Measures

### Mitigation Measure 3.5-1a (above): Conduct Project-Level Biological Reconnaissance Sensitive Species and Habitats Survey

#### Mitigation Measure 3.5-2g: Limit Human Disturbance of Cave Ecosystems

UC Santa Cruz shall continue to limit visitation of caves on campus and discourage activities by members of the public that could jeopardize the physical integrity, condition, or scientific value of the caves, through exclusion of access to the caves with bat-friendly fencing (i.e., fencing that allows unimpeded ingress and egress by bats), appropriate signage and educational literature, Campus Natural Reserve website information, or other appropriate measures.

#### Mitigation Measure 3.10-5a: Procedures for Building on Karst Where Groundwater Is Encountered and Where Pressure Grouting Is Required

(Refer to Section 3.10, "Hydrology and Water Quality")

#### Significance after Mitigation

Implementation of Mitigation Measures 3.5-1a, 3.5-2g, and 3.10-5a would reduce potential impacts on Dolloff Cave spider, Empire Cave amphipod, Empire Cave pseudoscorpion, MacKenzie's cave amphipod, and Santa Cruz telemid spider to a **less-than-significant** level by requiring reconnaissance-level surveys for projects under the 2021 LRDP to determine the likelihood of presence of habitat suitable for these species and implementing site-specific measures that would limit potential increases in runoff or the quality of runoff that could reach karst caves.

## Monarch Butterfly

Monarch butterfly is not listed under CESA or ESA or considered a CDFW species of special concern; however, CDFW monitors overwintering colonies of this species because monarch populations in California have severely declined since the 1980s (Xerces 2017). The cause of this decline is thought to be loss of milkweed (*Asclepias* spp.) and nectar plants; loss and degradation of overwintering groves; and other stressors like disease, insecticides, and impacts of climate change (Xerces 2017). The monarch overwintering season is typically October to March.

There are 19 known overwintering sites in Santa Cruz County (Xerces 2016). One monarch overwintering colony is known to occur within the Eucalyptus grove at the UC Santa Cruz Arboretum and Botanic Garden, and there are several larger overwintering colonies within close proximity of the LRDP area (CNDDDB 2020). The LRDP area contains potentially suitable overwintering habitat within coniferous forest and eucalyptus groves. Monarchs do not favor eucalyptus trees; however, most of the overwintering locations in California are within eucalyptus groves simply due to their abundance in coastal areas in the state (Xerces 2017). Eucalyptus groves tend to provide the dense foliage, wind protection, and microclimate conditions required by monarchs, although native trees also provide these conditions, and are the dominant tree species at some overwintering sites along the California coast (Xerces 2017). Within the LRDP area, native trees that could be used by overwintering monarchs include coast live oak and redwood (Xerces 2017). Development under the 2021 LRDP is proposed in redwood and coastal mixed hardwood vegetation communities in upper and central campus and within landscaping/ornamental habitat near the UC Santa Cruz Arboretum and Botanic Garden, where habitat potentially suitable for monarch butterfly may occur (Figure 3.5-6).

Implementation of projects under the 2021 LRDP may include vegetation removal (e.g., trees, shrubs) and land development in habitats that include redwood, landscaping/ornamental, coastal mixed hardwood, and riparian woodland and scrub (Table 3.5-4). These activities could result in inadvertent disturbance or loss of monarch overwintering colonies if present within tree stands in the LRDP area. This would be a **potentially significant** impact.

## Mitigation Measures

### Mitigation Measure 3.5-1a (above): Conduct Project-Level Biological Reconnaissance Sensitive Species and Habitats Survey



### Mitigation Measure 3.5-2h: Conduct Focused Surveys for Monarch Overwintering Colonies and Implement Avoidance Measures

If it is determined through implementation of Mitigation Measure 3.5-1a that a monarch overwintering colony or suitable overwintering habitat is present within a particular project site, the following measures shall be implemented:

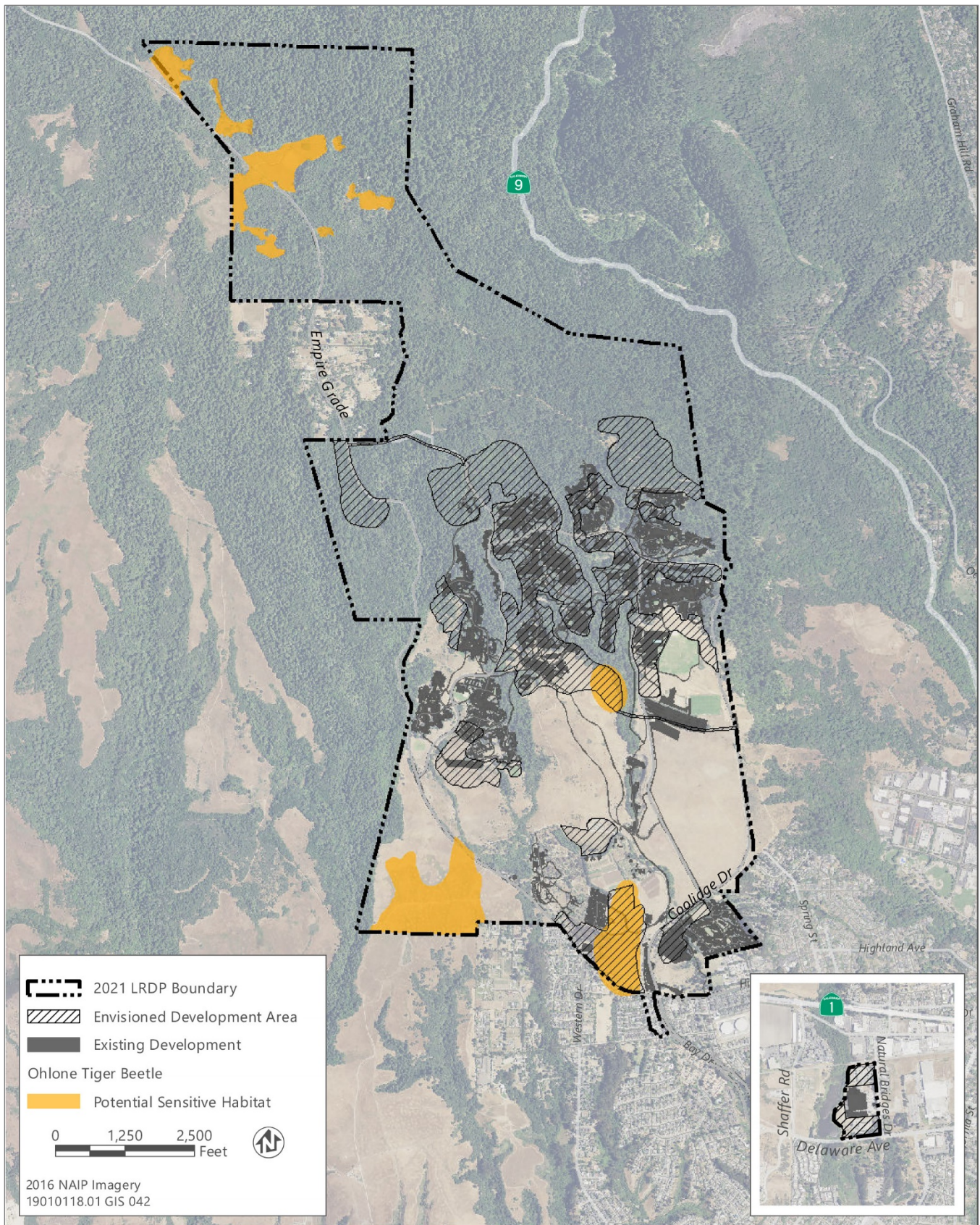
- ▶ To minimize the potential for loss of monarch overwintering colonies, project activities that include vegetation removal within suitable overwintering habitat (e.g., coniferous forest, eucalyptus forest) will be conducted from April through September to avoid the overwintering season (October through March), if feasible. If project activities are conducted outside of the overwintering season, no further mitigation will be required.
- ▶ Within 14 days before the onset of project activities that include vegetation removal between October 1<sup>st</sup> and March 31<sup>st</sup>, a qualified biologist familiar with monarchs and monarch overwintering habitat will conduct focused surveys for monarch colonies within habitat suitable for the species in the project site and will identify any colonies found within the project site.
- ▶ Monarch overwintering colonies that are identified within a project site will be demarcated with flagging or high-visibility construction fencing to prevent removal of the stand of trees containing the overwintering colony and encroachment by heavy machinery, vehicles, or personnel. Monarch overwintering colonies shall be protected throughout the duration of their presence within a project site.
- ▶ If modification or removal of a stand where overwintering monarchs have been identified is required for project implementation, and the project cannot be redesigned to avoid modification or removal of the stand, then UC Santa Cruz will prepare and implement a site-specific plan for the stand with the goal of maintaining habitat function for the monarch overwintering colony, following recommendations from *Protecting California's Butterfly Groves Management Guidelines for Monarch Butterfly Overwintering Habitat* (Xerces 2017). Examples of management strategies that could be considered include:
  - remove or trim hazard trees;
  - selectively remove or trim of trees to create a heterogeneous habitat that provides access to sunlight and shade for monarchs;
  - maintain suitable wind protection in the stand; and
  - replace removed trees with native trees in strategic locations to provide additional wind protection.

#### Significance after Mitigation

Implementation of Mitigation Measures 3.5-1a and 3.5-2h would reduce potential impacts on monarch overwintering colonies to a **less-than-significant** level by requiring reconnaissance-level surveys for projects under the 2021 LRDP to determine the likelihood of presence of overwintering colonies, focused surveys for colonies if determined to be likely to occur, and implementation of measures to avoid disturbance or loss of monarch overwintering colonies if present.

### Ohlone Tiger Beetle

Ohlone tiger beetle is listed as endangered under ESA. Ohlone tiger beetles are known to occur in lower campus within the grassland/coastal prairie area in the southwest corner of the LRDP area west of Empire Grade, including IAA (one of the preserves established for the Ranch View Terrace HCP), and within the Marshall Fields complex in north campus (Arnold 2020, Jones, pers. comm., 2020). Habitat assessments and surveys were performed in February of 2020 within the envisioned development areas of the 2021 LRDP, and no Ohlone tiger beetles were observed in these areas (Arnold 2020). While the beetles were not found in these areas, the LRDP area does contain habitat potentially suitable for the species, which is strictly associated with grasslands on Watsonville loam soils (Arnold 2020). Specifically, Ohlone tiger beetle is associated with coastal prairie habitat or other grassland habitat with native species (e.g., California oat grass) growing on Watsonville loam soils, where bare ground is evident and Mima mounds are usually present (Arnold 2020; Figure 3.5-8).



Source: Data received from Richard A. Arnold, Ph.D. in 2020

**Figure 3.5-8** Envisioned Development Areas Overlay of Ohlone Tiger Beetle Potential Sensitive Habitat in the LRDP Area

The LRDP area contains approximately 399 acres of grassland habitat and 108 acres of coastal prairie habitat (Table 3.5-1); however, most of this habitat is not associated with Watsonville loam soils (Arnold 2020). Proposed development under the 2021 LRDP would not occur within Marshall Field or IAA, where Ohlone tiger beetle is known to occur. However, as currently envisioned, development under the 2021 LRDP would occur within two areas where grassland habitat and Watsonville loam soils overlap: one area is on the northern edge of the Great Meadow and the second area is within IAD (Arnold 2020, Figure 3.5-6, Figure 3.5-8). Implementation of projects under the 2021 LRDP may include ground disturbance or vegetation removal in these areas, which could result in inadvertent mortality of Ohlone tiger beetles if present within a project site, or adverse effects on habitat that could substantially disrupt essential behavior patterns (e.g., breeding, feeding, or sheltering) to such an extent that injury or mortality is likely. This would be a **potentially significant** impact.

## Mitigation Measures

### Mitigation Measure 3.5-1a (above): Conduct Project-Level Biological Reconnaissance Sensitive Species and Habitats Survey

### Mitigation Measure 3.5-2i: Conduct Site-Specific Habitat Suitability Analysis for Ohlone Tiger Beetle, Obtain Incidental Take Authorization through Consultation with USFWS, Implement Minimization Measures

If it is determined through implementation of Mitigation Measure 3.5-1a that habitat suitable for Ohlone tiger beetle is present within a particular project site (i.e., grassland or coastal prairie with Watsonville soils, Figure 3.5-8), the following measures shall be implemented during the planning stages of a project under the 2021 LRDP:

- ▶ A qualified biologist will conduct a site-specific habitat suitability verification analysis within a project site to determine the likelihood of the species to be present. To be qualified, the biologist will: 1) be knowledgeable in Ohlone tiger beetle life history and ecology, 2) be able to correctly identify Ohlone tiger beetles and habitats, 3) have experience conducting field surveys of relevant resources, 4) be knowledgeable about state and federal laws regarding the protection of special-status species, and 5) have experience using CDFW's CNDDDB. The habitat assessment will include, but will not be limited to:
  - Identification or verification of the vegetation communities present in the project site.
  - Consideration of known occurrences within the LRDP area;
  - Description of the project, including proposed project construction activities;
  - Analysis of the type and likelihood of impacts on Ohlone tiger beetle as a result of project implementation; and
  - Potential project modifications or additional measures that may avoid and minimize mortality, injury, and disturbance of Ohlone tiger beetle and habitat.
- ▶ Results of the site-specific habitat suitability verification analysis will be submitted to UC Santa Cruz for review and consideration.
- ▶ Based on the results of the site-specific habitat suitability verification analysis, a qualified biologist will determine if any of the following would occur: loss of habitat function for Ohlone tiger beetle; injury or mortality of Ohlone tiger beetle; or disturbance of Ohlone tiger beetle that could substantially disrupt essential behavior patterns (e.g., breeding, feeding, or sheltering) to such an extent that injury or mortality is likely.
  - If a qualified biologist determines that the individual project would have no substantial adverse effect on Ohlone tiger beetle or its habitat and would not result in any injury or mortality, implementation of that individual project may proceed.
  - For those areas where disturbance, injury, or mortality of Ohlone tiger beetle cannot be avoided, UC Santa Cruz shall, in consultation with USFWS, implement impact minimization (e.g., preconstruction surveys and biological monitoring) and compensatory actions, including purchase of credits at a conservation bank, creation of additional habitat, and adaptive management strategies. No actions that could adversely affect

Ohlone tiger beetle will be allowed if adverse effects would result, unless consultation with USFWS is completed and additional measures, as required by USFWS, are implemented.

To the extent the project may result in “take” of the species, UC Santa Cruz may pursue incidental take coverage either by pursuing consultation and biological opinion under Section 7 of the federal ESA (where there is some federal nexus) or by developing an HCP, as described in Mitigation Measure 3.5-2a, which would require authorization by USFWS under Section 10 of the ESA. Such an HCP would provide incidental take coverage for species listed under ESA with potential to occur in the LRDP area: California red-legged frog and Ohlone tiger beetle. Typically, HCPs include the following elements, among others:

- ▶ Measures that UC Santa Cruz will undertake to monitor, minimize, and mitigate for such impacts, the funding available to implement such measures, and the procedures to deal with unforeseen or extraordinary circumstances.
- ▶ Additional measures that USFWS may require.
- ▶ Biological goals and objectives, which would define the expected biological outcome for each species covered by the HCP.
- ▶ Adaptive management, which includes methods for addressing uncertainty and also monitoring and feedback to biological goals and objectives.
- ▶ Monitoring for compliance, effectiveness, and effects.
- ▶ Permit duration which is determined by the time-span of the project and designed to provide the time needed to achieve biological goals and address biological uncertainty.

#### **Significance after Mitigation**

Implementation of Mitigation Measures 3.5-1a and 3.5-2i would reduce potential impacts on Ohlone tiger beetle to a **less than significant** level by requiring reconnaissance-level surveys for projects under the 2021 LRDP to determine the likelihood of presence of Ohlone tiger beetles or habitat suitable for the species, a site-specific habitat suitability verification analysis for projects within habitat suitable for the species, incidental take authorization and implementation of minimization measures if impacts on Ohlone tiger beetle are unavoidable, or development of a comprehensive HCP to cover future impacts on Ohlone tiger beetle.

#### **American Badger**

American badger is a CDFW species of special concern. This species occurs throughout California and is associated with various habitat types, including shrubland, woodland, forest, and grassland habitats, with friable soils. Over 100 feeding digs associated with American badgers have been observed within the LRDP area, including within Great Meadow and the UC Santa Cruz Arboretum and Botanical Garden in lower campus (Jones, pers. comm., 2020). Additionally, a badger carcass was recovered in 2004, within grassland habitat in the LRDP area (CNDDDB 2020). The LRDP area contains grassland, chaparral, and forest habitat potentially suitable for this species, and several proposed development areas within central and lower campus overlap these vegetation communities (Figure 3.5-6).

Implementation of projects under the 2021 LRDP may include ground disturbance, vegetation removal, and land development in several habitat types that may provide habitat suitable for American badger (Table 3.5-4). These activities could result in inadvertent disturbance, injury, or mortality of American badgers or destruction of active dens. Proposed development areas with the greatest potential for adverse effects on American badger would be those within grassland habitat near Great Meadow where the species has been observed (Figure 3.5-6). If present, badgers could be disturbed due to the presence of equipment and personnel in close proximity to a den, potentially resulting in abandonment of the den. Active dens could be inadvertently crushed and destroyed, if present, potentially resulting in the loss of young. This would be a **potentially significant** impact.

#### **Mitigation Measures**

##### **Mitigation Measure 3.5-1a (above): Conduct Project-Level Biological Reconnaissance Sensitive Species and Habitats Survey**

### Mitigation Measure 3.5-2j: Conduct Focused American Badger Survey and Establish Protective Buffers

If it is determined through implementation of Mitigation Measure 3.5-1a that habitat suitable for American badger is present within a particular project site, the following measures shall be implemented:

- ▶ Within 30 days before commencement of project activities, a qualified wildlife biologist with familiarity with American badger and experience using survey methods for the species will conduct focused surveys of habitat suitable for the species within the project site to identify any American badger dens.
- ▶ If occupied dens are not found, the qualified biologist will submit a report summarizing the results of the survey to UC Santa Cruz, and further mitigation will not be required.
- ▶ If occupied dens are found, impacts on active badger dens will be avoided by establishing exclusion zones around all active badger dens, the size of which will be determined by the qualified biologist. No project activities (e.g., vegetation removal, ground disturbance, staging) will occur within the exclusion zone until denning activities are complete or the den is abandoned, as confirmed by a qualified biologist. The qualified biologist will monitor each den once per week to track the status of the den and to determine when it is no longer occupied. When it is no longer occupied, project activities within the exclusion zone may occur.

#### Significance after Mitigation

Implementation of Mitigation Measures 3.5-1a and 3.5-2j would reduce potential impacts on American badger to a **less-than-significant** level by requiring reconnaissance-level surveys for projects under the 2021 LRDP to determine the likelihood of presence of the species, focused surveys for the species if determined to be likely to occur, and implementation of measures to avoid injury or mortality of American badger and destruction of active dens if detected.

### Mountain Lion

In April of 2020, the California Fish and Game Commission determined that listing of the Central Coast and Southern California ESU of mountain lion under CESA may be warranted. As a result, mountain lions within these ESUs are candidates for listing, and are thus protected under CESA. The LRDP area is within the Central Coast North ESU, which includes mountain lions in the Santa Cruz Mountains and the East Bay Hills. Mountain lions occupy a variety of habitats but are most abundant in riparian habitats. Habitat use is typically associated with prey availability (e.g., mule deer). Mountain lion home ranges can be greater than 200 square miles, though home ranges typically range from 5 to 100 square miles (Allen et al. 2015). Mountain lions are primarily nocturnal and are typically most active during dawn and dusk.

The Santa Cruz Puma Project is a partnership between UC Santa Cruz and CDFW that began in 2008 in an effort to better understand the physiology, behavior, ecology, and movement of mountain lions in the region, as well as to examine the impacts of habitat fragmentation from human development. This research has included radio collaring numerous mountain lions in the Santa Cruz Mountains. The tracks and home ranges of these radio collared lions, which are available on the Santa Cruz Puma Project's "Puma Tracker" application, demonstrate that lions are traversing through the LRDP area regularly and that many of the lions' home ranges overlap the LRDP area (Santa Cruz Puma Project 2020). Only a subset of mountain lions in the Santa Cruz Mountains are radio collared, and uncollared lions are often detected using camera traps on campus, so it is probable that additional mountain lions also occur within the LRDP area (Jones, pers. comm., 2020).

The LRDP area contains large areas of relatively undeveloped habitat within north campus and portions of central campus. The LRDP area is surrounded by undeveloped natural habitat (e.g., Wilder Ranch State Park, Henry Cowell Redwoods State Park), and provides connectivity between these habitats (Santa Cruz Puma Project 2020). Suitable denning habitat for mountain lions includes caves, other natural cavities, and thickets. Mountain lions are known to den within nearby Wilder Ranch State Park (Santa Cruz Puma Project 2015).

While some areas of the LRDP area may have relatively heavy human use (e.g., vehicles, pedestrians) compared to surrounding State Parks, some of the undeveloped areas may provide suitable denning habitat for this species. Because of the existing baseline of human disturbance on the UC Santa Cruz campus, it is probable that mountain lion denning would be limited to undeveloped areas of upper campus within the Campus Natural Reserve. Most of

the proposed development under the 2021 LRDP would occur within central and lower campus, where den habitat suitable for mountain lions does not occur. However, proposed projects in forested areas in upper campus (e.g., along Empire Grade, along Heller Drive) may contain den habitat suitable for the species.

Implementation of projects under the 2021 LRDP may include ground disturbance, vegetation removal, and land development in habitats, including redwood habitat and other vegetation communities in upper campus that may provide connectivity to other surrounding natural habitats (Table 3.5-4). These activities could result in inadvertent disturbance, injury, or mortality of mountain lions and cubs or destruction of active dens. If a mountain lion den is present within the LRDP area, mountain lions and cubs could be disturbed due to the presence of equipment and personnel and could be inadvertently injured or killed by heavy machinery and vehicles. Active dens could be inadvertently crushed and destroyed, if present, potentially resulting in the loss of cubs. This impact would be **potentially significant**.

## Mitigation Measures

### Mitigation Measure 3.5-1a (above): Conduct Project-Level Biological Reconnaissance Sensitive Species and Habitats Survey

### Mitigation Measure 3.5-2k: Conduct Focused Noninvasive Surveys for Mountain Lion Dens and Implement Avoidance Measures

If it is determined through implementation of Mitigation Measure 3.5-1a that den habitat potentially suitable for mountain lion is present within a particular project site (e.g., caves, other large natural cavities, thickets) or signs of mountain lion activities are observed (e.g., tracks, scat, carcasses or bones of prey species), the following measures shall be implemented to avoid take of mountain lions or destruction of den habitat:

- ▶ Within 30 days before commencement of project activities, a qualified wildlife biologist with familiarity with mountain lion and experience using survey methods for the species will conduct focused surveys of habitat suitable for the species within the project site to identify any potential mountain lion dens. Potential mountain lion dens will include caves, large natural cavities within rocky areas, or thickets deemed appropriate for use by mountain lions based on size and other characteristics (e.g., proximity to human development, surrounding habitat). The qualified wildlife biologist will also survey for signs of mountain lion (e.g., tracks, scat, prey items) in the vicinity of the cave, cavity, or thicket to help determine whether the den may be occupied by mountain lions. If the start of project activities lapses and more than 30 days pass since the survey was completed, an additional survey shall be conducted.
- ▶ If no potential dens are found, the qualified biologist will submit a report summarizing the results of the survey to UC Santa Cruz, and no further mitigation will be required.
- ▶ If potential dens are found, further investigation will be required to determine if the den is being used by a mountain lion or another carnivore species (e.g., coyote [*Canis latrans*], bobcat [*Lynx rufus*], gray fox [*Urocyon cinereoargenteus*]). Survey methods will include the use of trail cameras, track plates, hair snares, or other noninvasive methods. Surveys using these noninvasive methods will be conducted for three days and three nights to determine whether the den is occupied by mountain lions.
  - If the den is determined to be unoccupied by any carnivore species, the qualified biologist will submit a report summarizing the results of the survey to UC Santa Cruz, and no further mitigation will be required.
  - If the den is determined to be unoccupied by mountain lion, but is occupied by another carnivore species, the den will not be disturbed while the young of any species are dependent on the den for shelter.
  - If the den is determined to be occupied by mountain lion, a no-disturbance buffer of at least 2,000 feet will be established around the occupied den within which no project activities will occur, and UC Santa Cruz will notify and consult with CDFW to identify additional adequate seasonal restrictions and/or no disturbance buffers to avoid disturbance, injury, or mortality of mountain lion.

### Significance after Mitigation

Implementation of Mitigation Measures 3.5-1a and 3.5-2k would reduce potential impacts on mountain lion to a **less-than-significant** level by requiring reconnaissance-level surveys for projects under the 2021 LRDP to determine the likelihood of presence of the species, focused surveys for mountain lion dens if determined to be likely to occur, and consultation with CDFW if active mountain lion dens are present within a project site.

### Ringtail

Ringtail is a fully protected species under California Fish and Game Code. Ringtail is typically associated with riparian, forest, and shrub habitats and is typically found within approximately 0.6 mile of a permanent water source (e.g., perennial streams, longer-lasting intermittent streams). Habitat potentially suitable for ringtail is present within forest (e.g., redwood, mixed coastal hardwood, coast live oak), riparian woodland, and northern maritime chaparral habitat in the LRDP area. Ringtail use a variety of habitats for denning, including rock crevices, snags, and tree hollows, all of which may be present within the LRDP area. Development within these vegetation communities is primarily within upper campus and in portions of central campus (Figure 3.5-6).

Implementation of projects under the 2021 LRDP may include ground disturbance, vegetation removal, and land development in habitats, including riparian woodland and scrub, northern maritime chaparral, redwood, and coastal mixed hardwood habitats (Table 3.5-4). If these activities occur within habitat suitable for ringtail, they could result in inadvertent disturbance, injury, or mortality of ringtail or removal of dens. If present, ringtails could be disturbed due to the presence of equipment and personnel in close proximity to a den, potentially resulting in abandonment of the den. Active dens could be inadvertently removed during vegetation removal activities, if present, potentially resulting in the loss of young. This would be a **potentially significant** impact.

### Mitigation Measures

#### Mitigation Measure 3.5-1a (above): Conduct Project-Level Biological Reconnaissance Sensitive Species and Habitats Survey

#### Mitigation Measure 3.5-2l: Conduct Focused Surveys for Ringtail

If it is determined through implementation of Mitigation Measure 3.5-1a that habitat suitable for ringtail is present within a particular project site (e.g., forest or chaparral habitat within 0.6 mile of a permanent water source), the following measures shall be implemented:

- ▶ To minimize the potential for loss of ringtail and active ringtail dens, project activities (e.g., tree removal, other vegetation removal, ground disturbance, staging) within potentially suitable ringtail habitat will be conducted outside of the ringtail breeding season (not well defined, but likely approximately March 1 to July 31), if feasible.
- ▶ Within seven days before initiation of project activities within potentially suitable ringtail habitat, a qualified biologist with familiarity with ringtail and experience conducting ringtail surveys will conduct a focused survey for potential ringtail dens (e.g., hollow trees, snags, rock crevices) within the project site. The qualified biologist will identify sightings of individual ringtails, as well as potential dens.
- ▶ If individuals or potential or occupied dens are not found, the qualified biologist will submit a report summarizing the results of the survey to UC Santa Cruz, and further mitigation will not be required.
- ▶ If ringtails are identified or if potential dens are located, an appropriate method will be used by the qualified wildlife biologist to confirm whether a ringtail is occupying the den. This may include use of remote field cameras, track plates, or hair snares. Other devices, such as a fiber optic scope, may be utilized to determine occupancy.
  - If no ringtail occupies the potential den, the entrance will be temporarily blocked so that no other animals occupy the project site during project activities, but only after it has been fully inspected. The blockage will be removed once the project activities are completed.
  - If a den is found to be occupied by a ringtail, a no-disturbance buffer will be established around the occupied den. The no-disturbance buffer will include the den tree (or other structure) plus a suitable buffer as determined

by the biologist in coordination with CDFW. Project activities in the no-disturbance buffer will be avoided until the den is unoccupied as determined by the qualified wildlife biologist in coordination with CDFW.

### **Significance after Mitigation**

Implementation of Mitigation Measures 3.5-1a and 3.5-2l would reduce potential impacts on ringtail to a **less-than-significant** level by requiring reconnaissance-level surveys for projects under the 2021 LRDP to determine the likelihood of presence of the species, focused surveys for ringtail and ringtail dens if determined to be likely to occur, and implementation of measures to avoid injury or mortality of ringtail and removal of active dens, in consultation with CDFW, if detected.

### **San Francisco Dusky-Footed Woodrat**

San Francisco dusky-footed woodrat is a CDFW species of special concern. This subspecies occurs from the San Francisco Bay Area south throughout the northern Monterey Bay region (Matocq 2002). Habitat suitable for this species includes forest, woodland, scrub, and chaparral habitats with moderate canopy coverage and moderate to dense understory density. Woodrats construct nests, which are also known as houses or middens, with shredded grass, leaves, and other material. These nests can persist for decades, and are used for nesting, denning, and food storage. Habitat suitable for San Francisco dusky-footed woodrat, including forest (e.g., redwood, mixed coastal hardwood, coast live oak) and northern maritime chaparral, is present within the upper and central campus portions of the LRDP area, and woodrat nests have been observed throughout these habitat types in the LRDP area.

Implementation of projects under the 2021 LRDP within upper and central campus may include ground disturbance, vegetation removal, and land development in forest and chaparral habitats (Table 3.5-4). These activities could result in inadvertent disturbance, injury, or mortality of San Francisco dusky-footed woodrats or destruction of active nests. If present, San Francisco dusky-footed woodrats could be disturbed due to the presence of equipment and personnel in close proximity to a nest, potentially resulting in abandonment of the nest. Active nests could be inadvertently crushed and destroyed, if present, potentially resulting in the loss of young. This would be a **potentially significant** impact.

### **Mitigation Measures**

#### **Mitigation Measure 3.5-1a (above): Conduct Project-Level Biological Reconnaissance Sensitive Species and Habitats Survey**

#### **Mitigation Measure 3.5-2m: Conduct Focused Surveys for San Francisco Dusky-Footed Woodrat, Implement Avoidance Measures, or Relocate Nests**

If it is determined through implementation of Mitigation Measure 3.5-1a that habitat suitable for San Francisco dusky-footed woodrat is present within a particular project site, the following measures shall be implemented:

- ▶ Within seven days before initiation of project activities, a qualified biologist with familiarity with woodrats and experience conducting woodrat surveys will conduct a focused survey for San Francisco dusky-footed woodrat nests within the project site.
- ▶ If no woodrat nests are found during the focused survey, the qualified biologist will submit a report summarizing the results of the survey to UC Santa Cruz, and no further mitigation will be required.
- ▶ If woodrat nests are detected within the project site, the qualified biologist will determine whether the nest is active. The status of a nest is typically determined through the presence of large amounts of scat. If active woodrat nests are present that can be avoided, the perimeter of these nests will be demarcated with high-visibility construction fencing to prevent accidental encroachment by vehicles, equipment, or personnel.
- ▶ If active woodrat nests within a project site are detected that cannot be avoided, and project activities are planned to occur during the woodrat breeding season (April through June), these active nests must be avoided until the end of the breeding season.
- ▶ If active woodrat nests within a project site cannot be avoided, and project activities are planned to occur outside of the woodrat breeding season, a qualified biologist in consultation with CDFW will dismantle the woodrat nest by



hand, removing the materials layer by layer to allow adult woodrats to escape. If young are discovered during the disassembling process, the qualified biologist will leave the area for at least 24 hours to allow the adult woodrats to relocate their young on their own.

- ▶ When the disassembly process is completed, the nest materials will be collected and moved to another suitable nearby location to allow for nest reconstruction.

### Significance after Mitigation

Implementation of Mitigation Measures 3.5-1a and 3.5-2m would reduce potential impacts on San Francisco dusky-footed woodrat to a **less-than-significant** level by requiring reconnaissance-level surveys for projects under the 2021 LRDP to determine the likelihood of presence of the species, focused surveys for woodrat nests if determined to be likely to occur, implementation of measures to avoid injury or mortality of woodrats and removal of active nests, and relocation of nests during the nonbreeding season if they cannot be avoided.

### **Pallid Bat, Townsend’s Big-Eared Bat, and Western Red Bat**

Three special-status bat species could occur in the LRDP area: pallid bat, Townsend’s big-eared bat, and western red bat. All of these species are CDFW species of special concern. These species use a variety of habitats to roost, including caves, crevices, mines, hollow trees, and buildings. Potentially suitable roosting habitat is present within and adjacent to the LRDP area within crevices (e.g., exfoliating bark, cracks and fissures in tree stems or branches, crevices in buildings), cavities (e.g., large tree hollows, unoccupied buildings, caves), and foliage (e.g., clusters of leaves found in California bay, eucalyptus, willow, other tree species). These types of habitats would be largely present within undeveloped forested areas in upper campus; however, some suitable roost habitat areas may also be present in central and lower campus, including empty buildings, barns, and bridges.

Implementation of projects under the 2021 LRDP may include vegetation removal (e.g., tree removal), building demolition, and land development in habitats that include redwood, coastal mixed hardwood, and landscaping/ornamental habitats (Table 3.5-4). These activities could result in inadvertent disturbance, injury, or mortality of pallid bat, Townsend’s big-eared bat, and western red bat or destruction of active roosts. If present, these species could be disturbed due to the presence of equipment and personnel in close proximity to a roost, potentially resulting in abandonment of the roost. Active roosts, if present, could be inadvertently destroyed during tree removal or building demolition activities, potentially resulting in the loss of young. This would be a **potentially significant** impact.

### **Mitigation Measures**

#### **Mitigation Measure 3.5-1a (above): Conduct Project-Level Biological Reconnaissance Sensitive Species and Habitats Survey**

#### **Mitigation Measure 3.5-2n: Conduct Focused Bat Surveys and Implement Avoidance Measures**

If it is determined through implementation of Mitigation Measure 3.5-1a that suitable roost habitat for pallid bat, Townsend’s big-eared bat, and western red bat is present within a particular project site, the following measures shall be implemented:

- ▶ In the early planning stages of individual projects under the 2021 LRDP, a qualified biologist with familiarity with bats and bat ecology, and experienced in conducting bat surveys will conduct surveys for bat roosts in suitable habitat (e.g., large trees, crevices, cavities, exfoliating bark, bridges, unoccupied buildings) within and adjacent to the particular project site.
- ▶ If no evidence of bat roosts is found, the qualified biologist will submit a report summarizing the results of the survey to UC Santa Cruz, and no further study will be required.
- ▶ If evidence of bat roosts is observed, the species and number of bats using the roost will be determined. Bat detectors shall be used if deemed necessary to supplement survey efforts by the qualified biologist.
- ▶ A no-disturbance buffer of 250 feet will be established around active pallid bat, Townsend’s big-eared bat, or western red bat roosts, and project activities will not occur within this buffer until after the roosts are unoccupied.

- ▶ If roosts of pallid bat, Townsend's big-eared bat, or western red bat are determined to be present and must be removed, the bats will be excluded from the roosting site before the tree, building, or other structure is removed. A program addressing compensation, exclusion methods, and roost removal procedures will be developed in consultation with CDFW before implementation. Exclusion methods may include use of one-way doors at roost entrances (bats may leave but not reenter) or sealing roost entrances when the site can be confirmed to contain no bats. Exclusion efforts may be restricted during periods of sensitive activity (e.g., during hibernation or while females in maternity colonies are nursing young). The loss of each roost (if any) will be replaced in consultation with CDFW and may require construction and installation of bat boxes suitable to the bat species and colony size excluded from the original roosting site. If determined necessary during consultation with CDFW, replacement roosts will be implemented before bats are excluded from the original roost sites. Once the replacement roosts are constructed and it is confirmed that bats are not present in the original roost site by a qualified biologist, the roost tree, building, or other structure may be removed.

### **Significance after Mitigation**

Implementation of Mitigation Measures 3.5-1a and 3.5-2n would reduce potential impacts on pallid bat, Townsend's big-eared bat, and western red bat to **less than significant** by requiring reconnaissance-level surveys for projects under the 2021 LRDP to determine the likelihood of presence of the species, focused surveys for bat roosts if determined to be likely to occur, and implementation of no-disturbance buffers around active special-status bat roosts.

### **Impact 3.5-3: Result in Degradation or Loss of Riparian Habitat or Other Sensitive Natural Communities**

Implementation of projects under the 2021 LRDP would include potential land use conversion and development activities including ground disturbance, vegetation removal, and land development, which could result in the degradation or loss of riparian habitat, other sensitive natural communities, or ESHAs, or the reduction in the function of these habitats, if present. This would be a **potentially significant** impact.

Sensitive natural communities are identified at the alliance level using the *Manual of California Vegetation* (Sawyer et al. 2009 or current version, including updated natural communities data at <http://vegetation.cnps.org/>). Sensitive natural communities are defined by unique assemblages of vegetation that may include, or even be dominated by, relatively common species, but it is the assemblage of species that is rare. Coastal prairie, northern maritime chaparral, redwood, California bay, and purple needlegrass grassland habitats, which are considered sensitive natural communities, are present within the LRDP area. Additionally, other plant communities in the LRDP area may qualify as sensitive natural communities (e.g., arroyo willow thickets, black cottonwood forest and woodland) if the species assemblage, percent cover, and patch size are sufficient to meet membership rules and sensitive natural community requirements. Riparian woodland and scrub habitat are also present within the LRDP area, associated with perennial and intermittent drainages (Table 3.5-1, Figure 3.5-2). The dominant species in this vegetation community are willow (including arroyo willow) and black cottonwood, and the habitat also includes bigleaf maple and California hazelnut. Where these communities occur within the coastal zone, they may also be considered ESHAs under the CCA.

Implementation of the 2021 LRDP would result in development of approximately 378 acres of land within the LRDP area, approximately 41 percent of which would occur within urban/developed land cover types, where sensitive natural communities, riparian habitat, and ESHAs do not occur (Table 3.5-4, Figure 3.5-6). Known sensitive natural communities within the LRDP area, like coastal prairie and northern maritime chaparral, are located in undeveloped areas in lower and upper campus (Figure 3.5-2). Vegetation communities that may meet membership rules of a sensitive natural community are present within undeveloped areas in redwood, riparian woodland, coastal mixed hardwood, and coast live oak communities, primarily in the upper campus portion of the LRDP area (Figure 3.5-2). Additionally, planned development would occur within approximately 16 acres of landscaping/ornamental habitat and approximately 0.4 acre of agricultural habitat, where sensitive natural communities do not occur (Table 3.5-4). Because a large proportion of planned development would occur within areas where sensitive natural communities are unlikely to occur, many projects under the 2021 LRDP would not result in adverse effects on these habitats.

As presented in Table 3.5-4 and Figure 3.5-6, some of the proposed development under the 2021 LRDP would occur within natural vegetation communities where sensitive natural communities could potentially occur, including

redwood (approximately 119 acres of development), coastal mixed hardwood (approximately 9 acres of development), and riparian woodland and scrub (approximately 0.1 acre of development). Additionally, development is proposed to occur within approximately 6 acres of northern maritime scrub habitat and 4 acres of coastal prairie habitat during implementation of projects under the 2021 LRDP (Table 3.5-4, Figure 3.5-6). The potential development of known sensitive natural communities accounts for approximately 10 percent and 4 percent of the total northern maritime scrub habitat and coastal prairie in the LRDP area, respectively (Table 3.5-1, Table 3.5-4). Some proposed development would occur within the coastal zone where these sensitive natural communities may be considered ESHAs.

Implementation of projects under the 2021 LRDP may include ground disturbance, vegetation removal, and land development. These activities could result in degradation (e.g., reduction of vegetation cover, trampling, alteration of root structure) or removal of sensitive natural communities, riparian habitat, and ESHAs or reduction in the function of these habitats, if they are present within or adjacent to a particular project site. Implementation of projects under the 2021 LRDP could result in inadvertent introduction or spread of nonnative plants or plant pathogens (e.g., Sudden Oak Death), which could result in adverse effects to sensitive natural communities through competition or degradation of habitat. Additionally, implementation of projects under the 2021 LRDP could result in the use of herbicides during vegetation removal activities. Use of herbicide at the project level would require compliance with state and federal regulations to avoid adverse effects on sensitive habitats; however, inadvertent spray or herbicide drift could damage or kill non-target vegetation comprising riparian habitat or sensitive natural communities. Removal or degradation of sensitive natural communities, including riparian habitat, would be a **potentially significant** impact.

## Mitigation Measures

### Mitigation Measure 3.5-1a (above): Conduct Project-Level Biological Reconnaissance Sensitive Species and Habitats Survey

### Mitigation Measure 3.5-1c: Implement Measures to Avoid Introduction or Spread of Invasive Plant Species and Plant Pathogens

### Mitigation Measure 3.5-3a: Conduct Protocol-Level Surveys for Sensitive Natural Communities and Riparian Habitat and Implement Avoidance Measures

If it is determined through implementation of Mitigation Measure BIO-3.5-1a that sensitive natural communities or riparian habitat may be present within a particular project site, the following measures shall be implemented before implementation of project activities:

- ▶ A qualified botanist will perform a protocol-level survey of the project site for sensitive natural communities and sensitive habitats (including riparian habitat and ESHAs) following the CDFW's *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities* (CDFW 2018). Sensitive natural communities will be identified using the best available and current data, including keying them out using the most current edition of *A Manual of California Vegetation* (including updated natural communities data at <http://vegetation.cnps.org/>), or referring to relevant reports (e.g., reports found on the VegCAMP website).
- ▶ Before implementation of project activities, development setbacks will be established around all sensitive habitats identified during surveys, and these setbacks will be flagged or fenced with brightly visible construction flagging and/or fencing under the direction of the qualified biologist and no project activities (e.g., vegetation removal (including herbicide application), ground disturbance, staging) will occur within these areas. Setback distances will be dependent on various factors (e.g., presence of special-status wildlife or plant species) and determined by a qualified biologist in consultation with the appropriate agency (e.g., CDFW, CCC), but will generally be at minimum of 50 feet. Foot traffic by personnel will also be limited in these areas to prevent the introduction of invasive or weedy species or inadvertent crushing of plants. Periodic inspections during construction will be conducted by the monitoring biologist to maintain the integrity of exclusion fencing/flagging throughout the period of construction involving ground disturbance.

- ▶ If sensitive natural communities are identified within a project site that cannot be avoided, Mitigation Measure 3.5-3b shall apply.
- ▶ If project implementation cannot avoid and thus may adversely affect the bed, bank, channel, or associated riparian habitat subject to CDFW jurisdiction under California Fish and Game Code Section 1602, Mitigation Measure 3.5-3c shall apply.

### **Mitigation Measure 3.5-3b: Compensate for Unavoidable Loss of Sensitive Natural Communities**

If after implementation of Mitigation Measure 3.5-3a sensitive natural communities are determined to be present within a particular project site and these habitats cannot be avoided, the following measures shall be implemented:

- ▶ Compensate for unavoidable loss of any sensitive natural community habitat function such that no net loss of habitat function occurs by:
  - restoring sensitive natural community habitat function within the project site (e.g., using locally collected seed or cuttings);
  - restoring degraded sensitive natural communities outside of the project site at a sufficient ratio to offset the loss of habitat function (at least 3:1 for coastal prairie and at least 1:1 for other sensitive natural communities); or
  - preserving existing sensitive natural communities of equal or better value to the sensitive natural community affected through a conservation easement at a sufficient ratio to offset the loss of habitat function (at least 3:1 for coastal prairie and at least 1:1 for other sensitive natural communities).
- ▶ Prepare and implement a Compensatory Mitigation Plan that includes the following:
  - For preserving existing habitat outside of the project site in perpetuity, the Compensatory Mitigation Plan will include a summary of the proposed compensation lands (e.g., the number and type of credits, location of mitigation bank or easement), parties responsible for the long-term management of the land, and the legal and funding mechanism for long-term conservation (e.g., holder of conservation easement or fee title). UC Santa Cruz will provide evidence in the plan that the necessary mitigation has been implemented or that UC Santa Cruz has entered into a legal agreement to implement it and that compensatory habitat will be preserved in perpetuity.
  - For restoring or enhancing habitat within the project site or outside of the project site, the Compensatory Mitigation Plan will include a description of the proposed habitat improvements, success criteria that demonstrate the performance standard of maintained habitat function has been met, legal and funding mechanisms, and parties responsible for long-term management and monitoring of the restored or enhanced habitat.
  - Success criteria required to maintain habitat function for preserved and compensatory populations would include:
    - The extent of occupied area and density of plants associated with the sensitive natural community (number of plants per unit area) in compensatory habitats would be equal to or greater than the affected occupied habitat.
    - Compensatory and preserved sensitive natural communities would be self-producing. Populations would be considered self-producing when:
    - Plants associated with sensitive natural communities reestablish annually for a minimum of five years with no human intervention such as supplemental seeding; and
    - Reestablished and preserved habitats contain an occupied area and density comparable to existing occupied habitat areas in similar habitat types in the project vicinity.
- ▶ Impacts on sensitive natural communities considered ESHAs within the coastal zone will require a coastal development permit pursuant to the CCA and compliance with any requirements therein.

### Mitigation Measure 3.5-3c: Compensate for Unavoidable Loss of Riparian Habitat

If after implementation of Mitigation Measure 3.5-3a riparian habitat is determined to be present within a particular project site and the habitat cannot be avoided, the following measures shall be implemented:

- ▶ A Streambed Alteration Notification will be submitted to CDFW, pursuant to Section 1602 of the California Fish and Game Code. If proposed project activities are determined to be subject to CDFW jurisdiction, UC Santa Cruz will abide by the measures to protect fish and wildlife resources required by any executed agreement prior to any vegetation removal or activity that may affect the resource. Measures to protect fish and wildlife resources shall include, at a minimum, a combination of the following mitigation.
  - ▶ UC Santa Cruz will compensate for the loss of riparian habitat such that no net loss of habitat function and values occurs by:
    - restoring riparian habitat function and value within the project site;
    - restoring degraded riparian habitat outside of the project site;
    - purchasing riparian habitat credits at a CDFW-approved mitigation bank; or
    - preserving existing riparian habitat of equal or better value to the affected riparian habitat through a conservation easement at a sufficient ratio to offset the loss of riparian habitat function (at least 1:1).
  - ▶ UC Santa Cruz will prepare and implement a Compensatory Mitigation Plan that will include the following:
    - For preserving existing riparian habitat outside of the project site in perpetuity, the Compensatory Mitigation Plan will include a summary of the proposed compensation lands (e.g., the number and type of credits, location of mitigation bank or easement), parties responsible for the long-term management of the land, and the legal and funding mechanism for long-term conservation (e.g., holder of conservation easement or fee title). UC Santa Cruz will provide evidence in the plan that the necessary mitigation has been implemented or that UC Santa Cruz has entered into a legal agreement to implement it and that compensatory habitat will be preserved in perpetuity.
    - For restoring or enhancing riparian habitat within the project site or outside of the project site, the Compensatory Mitigation Plan will include a description of the proposed habitat improvements, success criteria that demonstrate the performance standard of maintained habitat function has been met, legal and funding mechanisms, and parties responsible for long-term management and monitoring of the restored or enhanced habitat.
    - Compensatory mitigation may be satisfied through compliance with permit conditions, or other authorizations obtained by UC Santa Cruz (e.g., Lake and Streambed Alteration Agreement), if these requirements are equally or more effective than the mitigation identified above.
- ▶ Impacts on riparian habitat considered an ESHA within the coastal zone will require a coastal development permit pursuant to the CCA and compliance with any requirements therein.

#### Significance after Mitigation

Implementation of Mitigation Measures 3.5-1a, 3.5-1c, 3.5-3a, 3.5-3b, and 3.5-3c would reduce significant impacts on sensitive natural communities and riparian habitat to a **less-than-significant** level by requiring reconnaissance-level surveys of projects under the 2021 LRDP to determine the likelihood of presence of the habitats, prevention measures for the spread of invasive plant species and Sudden Oak Death, protocol-level surveys for sensitive natural communities and riparian habitat if determined to be likely to occur, implementation of avoidance measures, and compensation for permanent loss of these habitats such that there is no net loss, potentially including a streambed alteration agreement with CDFW.

### Impact 3.5-4: Result in Degradation or Loss of State or Federally Protected Wetlands

Implementation of projects under the 2021 LRDP would include potential land use conversion and development activities including ground disturbance, vegetation removal, and land development, which could result in inadvertent alteration of wetland hydrology, removal of wetland vegetation, or inadvertent fill or dredging of wetlands. This would be a **potentially significant** impact.

Aquatic habitat within the LRDP area includes pond (e.g., UC Santa Cruz Arboretum Pond), stream (perennial and intermittent), swales, and seeps (Figure 3.5-3). While much of this habitat has been mapped, as shown in Figure 3.5-3, some features, including seeps, have not been previously mapped other than through a review of aerial imagery. Many of the aquatic habitats in the LRDP area are hydrologically connected to other streams that run into Monterey Bay, and would therefore be regulated by the US Army Corps of Engineers under the federal CWA. Additionally, these features and associated habitat are likely waters of the state and/or under the regulatory authority of CDFW pursuant to California Fish and Game Code 1600 et seq. Wetlands, swales, and seeps, would likely be considered state-protected wetland habitat.

Implementation of the 2021 LRDP would result in development of approximately 378 acres of land within the LRDP area, approximately 41 percent of which would occur within urban/developed land cover types where wetlands, seeps, and streams are less likely to occur than in undeveloped portions of the LRDP area (Table 3.5-4, Figure 3.5-6). While the majority of the development area would avoid mapped stream habitat, some development in central campus would be located in close proximity to streams associated with the Wilder and Moore Creek drainages. Additionally, proposed development areas in undeveloped portions of upper campus could contain wetland and seep habitat, which is known to occur in upper campus.

Implementation of projects under the 2021 LRDP may include ground disturbance, vegetation removal, and land development. These activities could adversely modify protected wetlands resulting in loss of wetland function and value by altering wetland hydrology, directly removing wetland vegetation, or filling or dredging wetlands, if these features are present within an individual project area. This would be a **potentially significant** impact.

### Mitigation Measures

#### Mitigation Measure 3.5-1a (above): Conduct Project-Level Biological Reconnaissance Sensitive Species and Habitats Survey

#### Mitigation Measure 3.5-4: Identify State or Federally Protected Wetlands, Implement Avoidance Measures, and Obtain Permits for Unavoidable Impacts on Wetlands

If it is determined through implementation of Mitigation Measure BIO-3.5-1a that state or federally protected wetlands may be present within a particular project site, the following measures shall be implemented before implementation of project activities:

- ▶ UC Santa Cruz will retain a qualified biologist, hydrologist, or wetland ecologist to prepare a formal delineation of the boundaries of state or federally protected wetlands within the project site (including 1602 jurisdictional waterways) according to methods established in the USACE wetlands delineation manual (Environmental Laboratory 1987) and the Arid West regional supplement (USACE 2008). The qualified biologist will also delineate the boundaries of wetlands that may not meet the definition of waters of the United States, but would qualify as waters of the state, according to the state wetland procedures (SWRCB 2019). This delineation report will be submitted by UC Santa Cruz to USACE and a preliminary jurisdictional determination will be requested.
- ▶ If state or federally protected wetlands are determined to be present within a project site that can be avoided, the qualified biologist will establish a buffer around wetlands and mark the buffer boundary with high-visibility flagging, fencing, stakes, or clear, existing landscape demarcations (e.g., edge of a roadway). The buffer will be a minimum width of 25 feet but may be larger if deemed necessary. The appropriate size and shape of the buffer zone will be determined in coordination with the qualified biologist and will depend on the type of wetland present (e.g., stream, seep, pond), the timing of project activities (e.g., wet or dry time of year), whether any special-status species may

occupy the wetland and the species' vulnerability to the project activities, environmental conditions and terrain, and the project activity being implemented.

Project activities (e.g., ground disturbance, vegetation removal, staging) will be prohibited within the established buffer. The qualified biologist will periodically inspect the materials demarcating the buffer to confirm that they are intact and visible, and wetland impacts are being avoided.

- ▶ If it is determined that fill of waters of the United States would result from project implementation, authorization for such fill will be secured from USACE through the Section 404 permitting process. Any waters of the United States that would be affected by the project will be replaced or restored on a no-net-loss basis in accordance with the applicable USACE mitigation guidelines in place at the time of construction. In association with the Section 404 permit (if applicable) and prior to the issuance of any grading permit, Section 401 Water Quality Certification from the Central Coast RWQCB will be obtained. For impacts on waters of the state that may not be covered by the 401 Water Quality Certification, UC Santa Cruz will secure Waste Discharge Requirements, which are described in Section 3.10, "Hydrology and Water Quality."
- ▶ If it is determined that disturbance or fill of state protected streams or riparian habitat cannot be avoided, UC Santa Cruz will notify CDFW before commencing activity that may divert the natural flow or otherwise alter the bed, bank, or riparian corridor of any 1602 jurisdictional waterway. If project activities trigger the need for a Streambed Alteration Agreement, the proponent will obtain an agreement from CDFW before the activity commences. The applicant will conduct project construction activities in accordance with the agreement, including implementing reasonable measures in the agreement necessary to protect the fish and wildlife resources, when working within the bed or bank of waterways or in riparian habitats associated with those waterways. These measures may include but not be limited to demarcation of the construction area, biological monitoring, environmental awareness training for construction crews, and compensatory measures (e.g., restoration, long-term habitat management).
- ▶ Impacts on wetlands considered ESHAs within the coastal zone (if any) will require a coastal development permit pursuant to the CCA and compliance with any requirements therein.

#### Significance after Mitigation

Implementation of Mitigation Measures 3.5-1a and 3.5-4 would reduce significant impacts on state and federally protected wetlands to a **less-than-significant** level by requiring reconnaissance-level surveys of projects under the 2021 LRDP to determine the likelihood of presence of these features, a formal delineation of wetland habitats, implementation of avoidance measures, and permitting and compensation for unavoidable impacts on state or federally protected wetlands such that there is no net loss of these resources.

#### Impact 3.5-5: Interfere with Wildlife Movement Corridors or Impede the Use of Wildlife Nurseries

Implementation of projects under the 2021 LRDP would include potential land use conversion and development activities including ground disturbance, vegetation removal, and land development, which could result in adverse effects on resident or migratory wildlife corridors through habitat fragmentation, degradation of aquatic habitat (e.g., streams), or blockage of important wildlife migration paths. These activities could also disturb wildlife nursery sites or degrade essential nursery habitat components. Impacts on movement corridors, habitat connectivity, and wildlife nursery sites would be **potentially significant**.

The LRDP area contains natural habitats, especially within north campus, which likely function as wildlife movement corridors. Aquatic habitats within the LRDP area, including perennial and intermittent streams, and associated riparian habitat likely serve as migratory corridors for fish, aquatic invertebrates, amphibians, and birds associated with riparian habitat. Terrestrial habitat within the north campus portion of the LRDP area has been identified as an ECA connecting natural landscape blocks to the north, west, and south (Figure 3.5-5). These areas are known movement corridors for mountain lions (see mountain lion discussion above under Impact 3.5-2, Santa Cruz Puma Project 2020) and likely are also used by bobcats (*Lynx rufus*), coyotes (*Canis latrans*), gray foxes, and mule deer.

Wildlife nursery sites include locations where fish and wildlife concentrate for hatching and/or raising young. Nursery sites that could occur within the LRDP area include bird rookeries (e.g., herons, cormorants), fawning areas for deer,

or maternal roosts for common bat species. Native nursery sites are not mapped on a regional scale and have generally not been mapped in the LRDP area. Nursery sites may be occupied by common wildlife species; however, these species may depend on these sites for important life history periods (e.g., breeding) and local nursery sites may have importance to wildlife populations at a regional level. Impacts on locally or regionally significant wildlife nursery sites may result in a substantial reduction in habitat for that species.

Noise or visual disturbance due to the presence of vehicles, equipment, or personnel or physical impediments, such as material storage or equipment staging during implementation of projects under the 2021 LRDP could cause resident or migratory wildlife to temporarily avoid or move out of the areas immediately surrounding project sites. These disturbances could temporarily disrupt the movement patterns of some wildlife species that may use project sites or adjacent lands for regular movements locally or for seasonal migrations. Additionally, access or use of any wildlife nursery sites (e.g., bat maternity roosts, deer fawning areas, bird rookeries, monarch overwintering sites) present within or adjacent to active project sites could be disturbed or impeded temporarily by project activities, as explained further below.

Much of the proposed development under the 2021 LRDP would be infill projects in already developed areas or in proximity to developed areas. The general types and levels of disturbance (e.g., vehicle and equipment noise, visual disturbance, human activity) from project construction activities near developed areas (e.g., buildings, public roads with consistent traffic) would likely be similar to existing disturbance levels in these areas. Wildlife near human development is likely accustomed to human presence and motorized vehicles (e.g., mule deer); therefore, any temporary incremental increases in noise and human disturbances from project activities in these areas are unlikely to substantially disrupt current movement patterns. Infill projects would likely not create any temporary or permanent barriers to wildlife movement in excess of surrounding development and existing barriers. Additionally, urban/developed areas within the LRDP area are less likely to contain sensitive wildlife nursery sites compared to undeveloped natural habitats.

Proposed development would occur within redwood, grassland, landscaping/ornamental (which may retain similar habitat function to natural habitats), northern maritime chaparral, coastal prairie, coyote brush, agricultural, and riparian woodland and scrub habitats (Table 3.5-4). Disturbance associated with project construction activities would likely result in noise and visual disturbance levels greater than existing conditions in these undeveloped areas and would also result in new temporary or permanent barriers to movement which could in temporary or permanent disruption of wildlife movement. Additionally, if nursery sites are present within project sites under the 2021 LRDP in these undeveloped or relatively undeveloped areas, project activities could potentially result removal or abandonment of a wildlife nursery. For example, project activities could remove trees containing a bat maternity roost or a bird nesting colony. In addition, project-related noise and human disturbance near nursery sites could result in temporary avoidance, changes in behavior, separation of adults and young, or, if the disturbance is severe, abandonment of the nursery site. These disturbances and behavioral responses could decrease the reproductive success of the affected population.

In addition to construction-related impacts, the placement and design of buildings and other infrastructure (e.g., fencing, lighting) could also result in adverse effects on wildlife movement or wildlife nursery sites, including bird strikes and wildlife entanglement. The amount of glass in a building, especially untreated glass, is the strongest predictor of the risk of bird collisions (American Bird Conservancy 2015). Under certain conditions, glass on buildings can form a mirror, reflecting sky, clouds, or nearby habitat attractive to birds. Under other conditions, glass may appear transparent or black, which birds may perceive as an unobstructed route (American Bird Conservancy 2015). If placed in front of ground level windows, landscaping (e.g., shrubs, trees) can be reflected in these windows, causing birds to collide with the building (American Bird Conservancy 2015). Bird-friendly building-design strategies include (1) using minimal glass, (2) placing glass behind some type of screening (e.g., netting, screens, grilles, shutters, exterior shades), and (3) using glass with inherent properties that reduce collisions (American Bird Conservancy 2015). Although most bird collisions occur during the day, some avian species migrate at night, and artificial night lighting on buildings may result in disorientation, potential collisions, changes in animal behavior (e.g., foraging behavior, communication), and an increased likelihood of predation. Certain fencing materials can impale or entangle wildlife,



including barbed, loose, or broken wires, and wrought iron fencing; and the height of fencing can result in snaring of legs or antlers of migrating deer, potentially result in injury or death.

Interference with wildlife movement corridors and disturbance or removal of wildlife nursery sites during construction or as a result of building or fencing design would be a **potentially significant** impact.

## Mitigation Measures

**Mitigation Measure 3.5-1a (above): Conduct Project-Level Biological Reconnaissance Sensitive Species and Habitats Survey**

**Mitigation Measure 3.5-3a (above): Conduct Protocol-Level Surveys for Sensitive Natural Communities and Riparian Habitat and Implement Avoidance Measures**

**Mitigation Measure 3.5-3b (above): Compensate for Unavoidable Loss of Sensitive Natural Communities**

**Mitigation Measure 3.5-3c (above): Compensate for Unavoidable Loss of Riparian Habitat**

**Mitigation Measure 3.5-4 (above): Identify State or Federally Protected Wetlands, Implement Avoidance Measures, and Obtain Permits for Unavoidable Impacts on Wetlands**

### Mitigation Measures 3.5-5a: Utilize Wildlife-Friendly Building and Fencing Designs

The following measures shall be implemented during the early planning stages of projects under the 2021 LRDP:

- ▶ Buildings and other permanent structures that would be constructed during implementation of projects under the 2021 LRDP shall be designed to minimize impacts on wildlife, including disruption to wildlife movement, bird strikes, and wildlife entanglement.
  - Building design shall utilize guidelines regarding building height, materials, external lighting, and landscaping provided in the American Bird Conservancy's "Bird Friendly Building Design" (American Bird Conservancy 2015) or other appropriate resources (e.g., International Dark Sky Association). UC Santa Cruz shall require review of the design plans by a qualified biologist, who will determine whether the plans are sufficient to reduce the likelihood of bird strikes or recommend additional measures.
  - Fencing associated with new development under the 2021 LRDP will utilize wildlife-friendly fencing design to minimize the risk of entanglement or impalement of wildlife. UC Santa Cruz will require the review of fencing design by a qualified biologist prior to installation. The fencing design shall meet, but not be limited to the following standards:
    - Minimize the chance of wildlife entanglement by avoiding barbed wire, loose or broken wires, or any material that could impale, snag, or entrap a leaping animal (e.g., wrought iron fencing with spikes).
    - Allow wildlife to jump over easily without injury. Typically, fences should be no more than 40 inches high on flat ground to allow adult deer to jump over. The determination of appropriate fence height will consider slope, as steep slopes are more difficult for wildlife to pass.
    - Allow smaller wildlife to pass under easily without injury or entrapment.

### Mitigation Measure 3.5-5b: Retain Wildlife Nursery Habitat and Implement Buffers to Avoid Wildlife Nursery Sites

If it is determined through implementation of Mitigation Measure 3.5-1a that wildlife nursery sites are present within a particular project site, the following measures shall be implemented prior to and during construction of a project:

- ▶ A qualified biologist will identify the important habitat features of the wildlife nursery and, prior to commencement of project activities (e.g., ground disturbance, vegetation removal, staging), will mark these features for avoidance and retention during project implementation to maintain the function of the nursery habitat.

- ▶ A no-disturbance buffer will be established around the nursery site if project activities are required while the nursery site is active/occupied. The appropriate size and shape of the buffer will be determined by a qualified biologist, based on potential effects of project-related habitat disturbance, noise, visual disturbance, and other factors, but will typically be a minimum of 100 feet. No project activity will commence within the buffer area until a qualified biologist confirms that the nursery site is no longer active/occupied. Monitoring of the effectiveness of the no-disturbance buffer around the nursery site by a qualified biologist during and after project activities will be required. If project activities cause agitated behavior of the individual(s), the buffer distance will be increased, or project activities modified until the agitated behavior stops. The qualified biologist will have the authority to stop any project activities that could result in potential adverse effects to wildlife nursery sites.

### **Significance after Mitigation**

Implementation of Mitigation Measures 3.5-1a, 3.5-3a, 3.5-3b, 3.5-3c, 3.5-4, 3.5-5a, and 3.5-5b would reduce significant impacts on wildlife movement corridors and native wildlife nursery sites to a **less-than-significant** level by requiring reconnaissance-level surveys of projects under the 2021 LRDP to determine the likelihood of presence of wildlife nursery sites; sensitive natural communities, riparian habitats, and wetlands and measures to avoid or compensate for loss of these resources which may provide habitat connectivity or habitat for wildlife nursery sites; wildlife-friendly building and fencing design to minimize impacts on wildlife as a result of bird strikes or entanglement; and identification and avoidance of important habitat for wildlife nursery sites.

### **Impact 3.5-6: Conflict with Local Policies and Ordinances**

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There are several policies in the City of Santa Cruz 2030 General Plan and the County of Santa Cruz General Plan and LCP that protect biological resources. UC Santa Cruz is not subject to local governments' regulations; however, mitigation measures identified under Impacts 3.5-1, 3.5-2, 3.5-3, 3.5-4, and 3.5-5 would reduce impacts on resources protected by local policies to less than significant. Therefore, the impact related to potential conflict with local policies or ordinances protecting biological resources would be **less than significant**.

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Appendix G of the State CEQA Guidelines suggests evaluating whether a project would "conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, LCP, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect." Pursuant to the UC's constitutional autonomy, development and uses on property under control of the UC Santa Cruz that are in furtherance of its educational purposes are not subject to local land use regulation, including City of Santa Cruz and County of Santa Cruz General Plan policies regarding protection of biological resources. Although UC Santa Cruz is not subject to City and County policies and regulations, UC Santa Cruz strives to be consistent with local policies, where feasible.

The City of Santa Cruz 2030 General Plan and the County of Santa Cruz General Plan include policies protecting biological resources, such as rivers, streams, creeks, wetlands, riparian habitat, special-status plants, special-status wildlife, and sensitive habitats. As discussed above in Impacts 3.5-1, 3.5-2, 3.5-3, 3.5-4, and 3.5-5, while implementation of projects under the 2021 LRDP would affect these resources, mitigation measures would be implemented to reduce impacts to less than significant. No conflict with the policies protecting these resources would occur; therefore, the impact would be **less than significant**.

### **Mitigation Measures**

No mitigation is required.

### **Impact 3.5-7: Conflict with the Provisions of an Adopted Habitat Conservation Plan or Natural Community Conservation Plan**

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The Ranch View Terrace HCP plan area is located within the lower campus portion of the LRDP area. The HCP plan area includes two preserves: IAA and IAD. Development of IAD would result in a conflict with the provisions of the adopted HCP and incidental take permit granted by USFWS. This would be a **potentially significant** impact.

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The Ranch View Terrace HCP was developed by the UC Regents to seek regulatory compliance for the construction and operations of the Ranch View Terrace project and a new Emergency Response Center and was approved in 2005 (UC Santa Cruz 2005b). The HCP plan area includes approximately 38.8 acres of the lower campus portion of the LRDP area (Figure 3.5-1). Two preserves were established to maintain habitat for Ohlone tiger beetle and California red-legged frog: IAA in the southwestern portion of the LRDP area and IAD directly south of the Ranch View Terrace project site (Figure 3.5-1).

Ohlone tiger beetles are known to occupy the grassland/coastal prairie area in the southwest corner of the LRDP area west of Empire Grade, including IAA (Arnold 2020, Jones, pers. comm., 2020) and the area likely provides habitat connectivity for California red-legged frogs dispersing from the Arboretum Pond breeding area to non-breeding areas, as discussed under the California red-legged frog discussion in Impact 3.5-2. IAD was not known to be occupied by either covered species when established in 2005. The conservation strategy for this preserve was to manage the vegetation within the preserve through grazing, hand removal of nonnative vegetation, and artificial scraping using heavy equipment to mimic bare ground conditions favored by Ohlone tiger beetle, until conditions approached those within IAA, such that the habitat would be suitable for and would attract Ohlone tiger beetle. The Ranch View Terrace HCP includes monitoring requirements of IAA (off-site of the Ranch View Terrace project site) and IAD (the on-site preserve) for effectiveness of vegetation management and presence/absence of Ohlone tiger beetle and California red-legged frog (UC Santa Cruz 2019). Despite 14 years of vegetation management and monitoring for Ohlone tiger beetle, the species has not colonized IAD (UC Santa Cruz 2019).

Proposed development under the 2021 LRDP includes potential development of IAD, under the condition that the HCP could be modified to allow it. As this area is currently a designated preserve under the Ranch View Terrace HCP, development of IAD would result in a conflict with the provisions of the adopted HCP and incidental take permit granted by USFWS. This would be a **potentially significant** impact.

## Mitigation Measures

### Mitigation Measure 3.5-7: Establish Alternative Preserves to Replace Inclusion Area D, and Amend the Ranch View Terrace HCP with Approval from USFWS

The following measures shall be implemented prior to any development activities within IAD:

- ▶ UC Santa Cruz shall, in consultation with USFWS, seek an amendment to the Ranch View Terrace HCP to accommodate replacement of IAD with replacement habitat that may be suitable, created, or restored for Ohlone tiger beetle.
- ▶ In consultation with USFWS, UC Santa Cruz will determine whether a new preserve(s) could be established to replace IAD. New proposed preserves will be characterized by equal (12.5 acres) or greater size, and better habitat (e.g., intact coastal prairie, Watsonville loam soils, bare soil available, presence of Ohlone tiger beetle) than IAD.
- ▶ If USFWS concurs that replacement of IAD is appropriate, the Ranch View Terrace HCP will be amended to exclude IAD. Any new preserve(s) would be managed through yearly monitoring and vegetation management activities with the objective of fostering occupation by Ohlone tiger beetle.
- ▶ If USFWS does not concur that replacement of IAD is appropriate, the existing incidental take permit and associated measures in the Ranch View Terrace HCP will apply, and no development will occur within IAD.
- ▶ As noted in Mitigation Measures 3.5-2a and 3.5-2i, UC Santa Cruz may elect to pursue a comprehensive HCP, which shall be accomplished either by amending the Ranch View Terrace HCP or by incorporating and replacing the existing Ranch View Terrace HCP.

### Significance after Mitigation

Implementation of Mitigation Measure 3.5-7 would reduce significant impacts resulting from conflict with the provisions of the Ranch View Terrace HCP to a **less-than-significant** level by requiring consultation with USFWS, identification and protection of alternative preserves, or amendment of the existing HCP or preparation of a new more comprehensive HCP, or prohibition of development in IAD if the HCP cannot be amended.

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