

4.3 Biological Resources

4.3.1 Introduction

This section identifies existing biological resources at and in the vicinity of the project site and analyzes the potential for implementation of the proposed Computational Research and Theory (CRT) project to affect those resources. Information presented in the discussion and analysis that follows was drawn from site visits conducted by Pacific Biology in June 2007 and by other biological consultants (ESA 2002a-c; ESA 2003a-c); previous environmental documents prepared by the Lab for Lawrence Berkeley National Laboratory (LBNL) projects; biological data contained in the California Natural Diversity Database (CNDDDB)¹ and the California Native Plant Society's (CNPS) Electronic Inventory of Rare and Endangered Vascular Plants of California; and standard biological references. This biological resources chapter identifies potential effects of the proposed project on sensitive species and habitats and proposes mitigation measures to reduce those impacts to less than significant levels.

In response to the Notice of Preparation for this EIR, several commenters raised concerns regarding impacts to biological resources as a result of project development in Strawberry Canyon. Another commenter raised concerns about impacts to mature redwood trees. These scoping comments are addressed in the impact analysis presented below.

4.3.2 Environmental Setting

Regional Location

The project site is located in the San Francisco Bay Area, which is characterized by a Mediterranean climate with moderately warm, dry summers and mild, wet winters. More specifically, LBNL is situated on approximately 200 acres on the western slopes of the Oakland-Berkeley Hills. Roughly one-half of LBNL is within Strawberry Canyon and has a south-facing orientation; the balance is within Blackberry Canyon and has a west-facing orientation. The Main Campus of the University of California, Berkeley, is located west of LBNL and the Hill Campus² is located to the north, east, and south of LBNL. Regional open space, including the 2,000-acre Tilden Regional Park, lies to the northeast.

¹ The CNDDDB is a computer database maintained by the California Department of Fish and Game of information on the location and distribution of animals and plants that are rare, threatened, endangered, or candidate species, or habitats considered to be of high biological value or of limited distribution.

² The Hill Campus is an 800-acre portion of the University of California, Berkeley. The Hill Campus extends from Stadium Rim Way to Grizzly Peak Boulevard, is primarily designated as open space, and includes a 300-acre Ecological Study Area and the Botanical Garden.

Surrounding Land Uses and Plant Communities

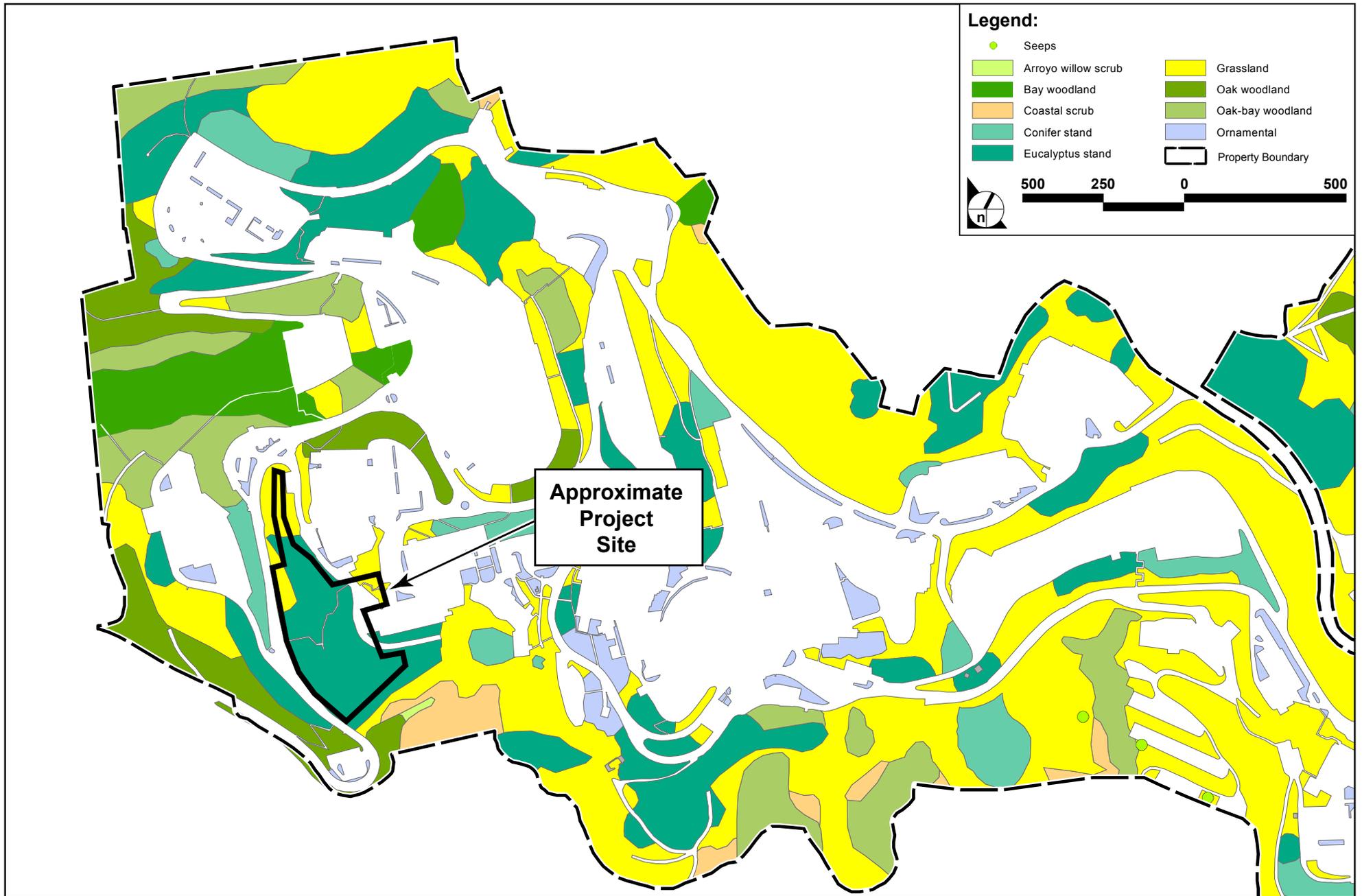
The hills surrounding LBNL contain low- to moderate-density residential neighborhoods mixed with open space containing a mosaic of plant communities and wildlife habitats, including oak and mixed hardwood forests, native and non-native grasslands, chaparral, coastal scrub, marsh and wetland communities, and riparian scrubs and forests. Developed areas of LBNL have been landscaped with a mix of non-native horticultural species and, more recently, California native plants and other drought-tolerant species suitable for landscaping purposes. Open space at LBNL is dominated by annual grassland, with eucalyptus and conifer stands planted throughout the site. Undeveloped areas along the eastern and southern perimeters of the Lab site support a mosaic of coastal scrub and grassland. Woodlands dominated by oak and bay occur along most drainages at LBNL. Open space vegetation on the Lab site is managed on an annual basis, either by goats or by mechanical means, according to the guidelines set forth in LBNL's Maintenance Vision for a Fire-Safe Sustainable Landscape (LBNL 2001).

Project Site

The approximately 2.25-acre project site is located in the western portion of the LBNL site and is flanked on three sides by Buildings 70 and 70A to the east, the Building 50 complex to the north, and Cyclotron Road and the Blackberry Canyon entrance gate to the west. The site generally slopes steeply down from east to west and a wooden stairway connecting Cyclotron Road with East Road bisects the site from east to west. The project site contains mixed grassland vegetation and a eucalyptus stand. Similar to other undeveloped portions of LBNL, the herbaceous vegetation on the site is managed on an annual basis by goats or mechanical means.

Plant Communities and Wildlife Habitat

Plant communities are assemblages of plant species that occur together in the same area and are defined by species composition and relative abundance. Please see Figure 4.3-1, Vegetation at Project Site, for the locations of the various plant communities that occur throughout LBNL, including the proposed CRT project site. Two plant communities occur on the project site, including mixed grassland and a eucalyptus stand. There are 72 trees on the project site, including 64 blue gum eucalyptus (*Eucalyptus globulus*), 5 coast live oak (*Quercus agrifolia*), 2 California bay (*Umbellularia californica*), and 1 plum (*Prunus* sp.). The on-site mixed grassland and eucalyptus stand are discussed in more detail below.



SOURCE: Perkins+Will - September 2007, LBNL; ESA (2003)

FIGURE 4.3-1

Vegetation at Project Site

Mixed Grassland

The northern portion of the project site is characterized by mixed grassland vegetation. Additionally, a small isolated area of grassland vegetation occurs in the eastern portion of the project site. These grassland areas are dominated by the non-native annual grass species wild oat (*Avena sativa*), but also contains other non-native grasses such as ripgut brome (*Bromus diandrus*) and harding grass (*Phalaris aquatica*). Other herbaceous vegetation includes Italian thistle (*Carduus pycnocephalus*), bristly ox-tongue (*Picris echioides*), French broom (*Genista monspessulana*), and poison oak (*Toxicodendron diversilobum*). Coast live oak, eucalyptus, and California bay trees occur at scattered locations throughout this portion of the site.

Moving north to south across the site (onto the steeper slopes within the eucalyptus stand, see below), the occurrence and density of native grass species increases, including purple needlegrass (*Nasella pulchra*) and blue wild rye (*Elymus glaucus*). The density of native grasses is highest in the southern portion of the site (near the fence line) where purple needlegrass provides 10 to 15 percent ground cover within an approximately 30 feet by 50 feet area.

Grasslands in the project area provide habitat for reptiles and amphibians, such as western fence lizard (*Sceloporus occidentalis*), northern alligator lizard (*Elgaria coerulea*), and California slender salamander (*Batrachoseps attenuatus*). Bird species commonly utilizing grassland habitats include mourning dove (*Zenaidura macroura*), golden-crowned sparrow (*Zonotrichia atricapilla*), and numerous other species. Mammals such as Botta's pocket gopher (*Thomomys bottae*) and striped skunk (*Mephitis mephitis*) often forage within grassland and thrive when varied natural habitats are available nearby. Small mammals commonly occurring within grasslands attract raptors such as red-tailed hawk (*Buteo jamaicensis*) and red-shouldered hawk (*Buteo lineatus*).

Eucalyptus Stand

The southern portion of the project site contains a eucalyptus stand. This area contains mature, non-native blue gum eucalyptus trees. The understory is characterized by mixed grassland vegetation (as described above). Mature eucalyptus stands provide nesting habitat for a number of raptors, including red-tailed hawk, red-shouldered hawk, and great horned owl (*Bubo virginianus*). Eucalyptus trees may also provide roosting and nursery sites for several bat species, including fringed myotis (*Myotis thysanodes*) and long-eared myotis (*Myotis evotis*).

Nearby Plant Communities

Several plant communities occur near the project site but are not present within the project's disturbance boundaries. Specifically, the North Fork of Strawberry Creek and associated bay woodland, arroyo willow scrub (associated with an unnamed tributary [locally and herein after called "Cafeteria Creek"] to Strawberry Creek), and coastal scrub occur near the project boundaries. Given their proximity to the project site, they are further discussed below.

The North Fork of Strawberry Creek is located on the north side of Cyclotron Road, north and down-slope of the project site. The creek supports well-developed California bay woodland that at its closest point is approximately 120 feet north of the project boundary. The woodland is dominated by California bay, with coast live oak and big-leaf maple (*Acer macrophyllum*) occurring occasionally. Understory species are often absent where the tree canopy is most dense, but in more open stands understory species occur such as fairy bells (*Disporum hookeri*), coastal wood fern (*Dryopteris arguta*), California honeysuckle (*Lonicera hispidula*), and Stebbin's grass (*Erharta erecta*). California bay woodlands in a natural condition may provide habitat for numerous wildlife species, including California slender salamander, varied thrush (*Ixoreus naevius*), American robin (*Turdus migratorius*), western scrub jay (*Aphelocoma californica*), and Steller's jay (*Cyanocitta stelleri*). Mammal species that may use this woodland type include California black-tailed deer (*Odocoileus hemionus*), raccoon (*Procyon lotor*), and opossum (*Didelphis virginiana*).

A small area (approximately 0.06 acre) of arroyo willow scrub occurs approximately 110 feet south of project site. This small stand of willow scrub is dominated almost exclusively by arroyo willow (*Salix lasiolepis*), with California blackberry also occurring. The occurrence of this plant community is associated with Cafeteria Creek (a tributary to Strawberry Creek) located just south of Blackberry Canyon Gate. Willow scrub habitat may support numerous wildlife species including reptiles and amphibians such as western toad (*Bufo boreas*), Pacific treefrog (*Hyla regilla*), and California slender salamander. Resident and migratory birds often found in willow scrub include song sparrow (*Melospiza melodia*), spotted towhee (*Pipilo maculates*), yellow-rumped warbler (*Dendroica coronata*), Wilson's warbler (*Wilsonia pusilla*), western scrub jay, and black phoebe (*Sayornis nigricans*). Mammals such as western harvest mouse (*Reithrodontomys megalotis*), opossum, and raccoon also utilize riparian habitats for nesting and foraging.

Coastal scrub habitat occurs approximately 25 feet to the south of the project site. This plant community is dominated by coyote brush (*Baccharis pilularis*) with California honeysuckle (*Lonicera hispidula* var. *vacillans*), bedstraw (*Galium* sp.), and hedge nettle also likely occurring. Coastal scrub, especially coyote brush scrub, is often the successional phase between grassland and oak woodland. Coastal scrub provides nesting and foraging habitat for various birds, including spotted towhee, California towhee

(*Pipilo crissalis*), common bushtit (*Psaltriparus minimus*), western scrub jay, and California quail (*Callipepla californica*). Raptors may forage over such areas and prey on small birds, small mammals, and reptiles.

Special-Status Species

For the purposes of this EIR, the term “special-status species” includes species that are listed and receive specific protection defined in federal or state endangered species legislation, as well as species not formally listed as threatened or endangered but designated as species “of concern,” or as “rare” or “sensitive” on the basis of adopted policies and expertise of federal or state resource agencies or organizations with acknowledged expertise, including the U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG), National Marine Fisheries Service (now known as “NOAA Fisheries”), and the California Native Plant Society. Specifically, the following categories are included: federally listed endangered and threatened species; species proposed for listing as endangered or threatened; candidates for such listing; federally identified Birds of Conservation Concern; species of local concern; state-listed endangered and threatened species, and rare (plants only) species; California Species of Special Concern; species designated “special animals” by the state; and “fully protected” species. Additionally, for the purposes of this report, raptors (birds of prey) are also considered to be of special status, as they are specifically protected by Fish & Game Code Section 3503.5, which prohibits the take, possession, or killing of raptors and owls, their nests, and their eggs.³

A list of special-status plant and animal species reported to occur in the vicinity of the project site was compiled on the basis of data in the California Natural Diversity Database (CDFG 2005, 2007), the California Native Plant Society Electronic Inventory (CNPS 2005, 2007), special-status species information from the U.S. Fish and Wildlife Service (USFWS 2005a), and biological literature of the region. Table 4.3-1 is intended to be comprehensive and includes species for which potential habitat (i.e., general habitat types) occurs within or in the vicinity of the project site. The table reflects the most recent designation of special-status plant and wildlife species based on the current Special Vascular Plants, Bryophytes, and Lichens List (CDFG 2007) and Special Animals List (CDFG 2006).

No special-status plant or wildlife species have been identified on the project site during the field survey conducted by Pacific Biology or by other biological consultants (ESA 2002a-c; ESA 2003a-c). However, for

³ The inclusion of birds protected by Fish & Game Code Section 3503.5 is in recognition of the fact that these birds are substantially less common in California than most other birds, having lost much of their habitat to development, and the recognition that the populations of these species are therefore substantially more vulnerable to further loss of habitat and to interference with nesting and breeding than are most other birds. It is noted that a number of raptors and owls are already specifically listed as threatened or endangered by state and federal wildlife authorities.

the reasons discussed in Table 4.3-1, several special-status wildlife species are judged to have at least a moderate potential to occur on or adjacent to the project site.

Special-Status Wildlife Species

Of the special-status wildlife species presented in Table 4.3-1, only the following species, which were determined to have at least a moderate potential to occur within the project vicinity, are considered in the impact analysis: Alameda whipsnake, Cooper's hawk, great horned owl, red-tailed hawk, red-shouldered hawk, American kestrel, Allen's hummingbird, pallid bat, long-eared myotis, and fringed myotis. These species are further discussed below.

Alameda Whipsnake

Alameda whipsnake (*Masticophis lateralis euryxanthus*) is listed as threatened under both federal and state law and is generally found in open-canopied shrub communities, including coastal scrub and chaparral, and adjacent habitats including oak woodland/savanna and grassland areas (Swaim 1994). Recent surveys and studies have shown that Alameda whipsnake can be found in a wider variety of habitats than previously thought. For example, whipsnakes have been found in grasslands with very little scrub present, in coastal scrub with dense canopy cover, and in patches of scrub less than 0.5 acre in size (Swaim 2003). Therefore, habitat associations for this subspecies should include those that co-occur in the general chaparral/scrub habitat mosaic (Alvarez 2005). These recent findings suggest the possibility that whipsnakes could inhabit, or disperse through, areas of the LBNL site where coastal scrub habitat occurs in a mosaic with other habitat types such as grassland or woodland. Though habitat types and features used by Alameda whipsnakes may vary, home ranges typically are centered on areas of scrub habitats with open to partially open canopy, on south-, southeast-, east-, and southwest-facing slopes. Rock outcrops are important for protection from predators and as habitat for western fence lizards and other prey species (Swaim 1994).

A recent whipsnake habitat assessment of LBNL (Swaim 2006) found that potential whipsnake occurrence would be most likely in the easternmost portion LBNL that is contiguous with open space to the north and east and along the south-facing slopes of Strawberry Canyon. These areas are primarily open space with a mosaic of grassland, coastal scrub, riparian woodland, and stands of non-native trees and provide a potential dispersal corridor from designated critical habitat for the species (USFWS 2006) to areas of potential suitability for the whipsnake. The 2006 LBNL habitat assessment identified and mapped potential for Alameda whipsnake occurrence based on habitat types present and other factors, including habitat fragmentation and existing land uses. Areas designated as having "highly suitable potential habitat" for whipsnake (which include the CRT project site) were those that included relatively

large patches of coastal scrub in a mosaic of other habitat types and that were contiguous with larger open space areas and known occupied habitat and/or proposed critical habitat (Swaim 2006; McGinnis 1996). Areas designated as having “potential habitat” were those that contained smaller patches of scrub in a mosaic with other habitat types but where there was also a fairly significant degree of fragmentation and habitat degradation and a lesser degree of contiguity with larger areas of less disturbed potential habitat.

After conducting site visits during the summer of 2000, the USFWS determined that most of the LBNL site, including areas with existing facilities, should be excluded from its final critical habitat listing (USFWS 2000).⁴ The 2000 designation of critical habitat was rescinded in 2003 but a new critical habitat designation was proposed in 2005 and adopted in October 2006 that, similar to the 2000 designation, includes the easternmost portion of the LBNL site.⁵ This area is designated as a fixed constraint under the 2006 LRDP. Since it is a protected area, no development is proposed or allowed.

The project site is within an area of LBNL identified as having “highly suitable potential habitat” for Alameda whipsnake (see Figure 4.3-2, Sensitive Habitat at LBNL). A qualified biologist evaluated the site-specific suitability of the project site for Alameda whipsnake on June 28, 2007. The project site is located within a eucalyptus grove, has a grassland understory, and does not contain scrub communities often associated with the Alameda whipsnake. However, the project site is near areas containing high-quality habitat for Alameda whipsnake. Specifically, coastal scrub habitats and open space along south-facing slopes occur to the south of the project site that could be traversed. As such, when considered with nearby habitats, the project site may be part of a mosaic of habitats utilized by the species. While core habitat does not occur within the project boundary and Alameda whipsnake is not expected to permanently reside on the project site, the subspecies may temporarily utilize on-site habitats.

⁴ Critical habitat for the Alameda whipsnake was rescinded by court order on May 9, 2003. For the purposes of this analysis, the concept is still relevant in that the designation of critical habitat implies a high likelihood of species' presence where critical habitat elements are found. Even though critical habitat has been rescinded, the species is still fully protected under the FESA. In addition, the USFWS (2002) published a draft recovery plan that includes the species, and areas that were formerly designated as critical habitat units are now designated as recovery units under the plan. Finally, critical habitat for the species was re-proposed in October 2005 (USFWS 2005d) and, as adopted in October 2006 (USFWS 2006), includes the easternmost portion of the Lab site.

⁵ The adopted critical habitat, while smaller than that proposed in 2005 (155,000 acres adopted, compared to 203,000 acres proposed), includes the same part of the Lab main site as included in the proposed critical habitat. Most of the 48,000 acres excluded from the adopted critical habitat are in eastern Contra Costa County, although smaller areas were excluded in the Easy Bay hills in western Contra Costa and southern Alameda counties.

Cooper's Hawk

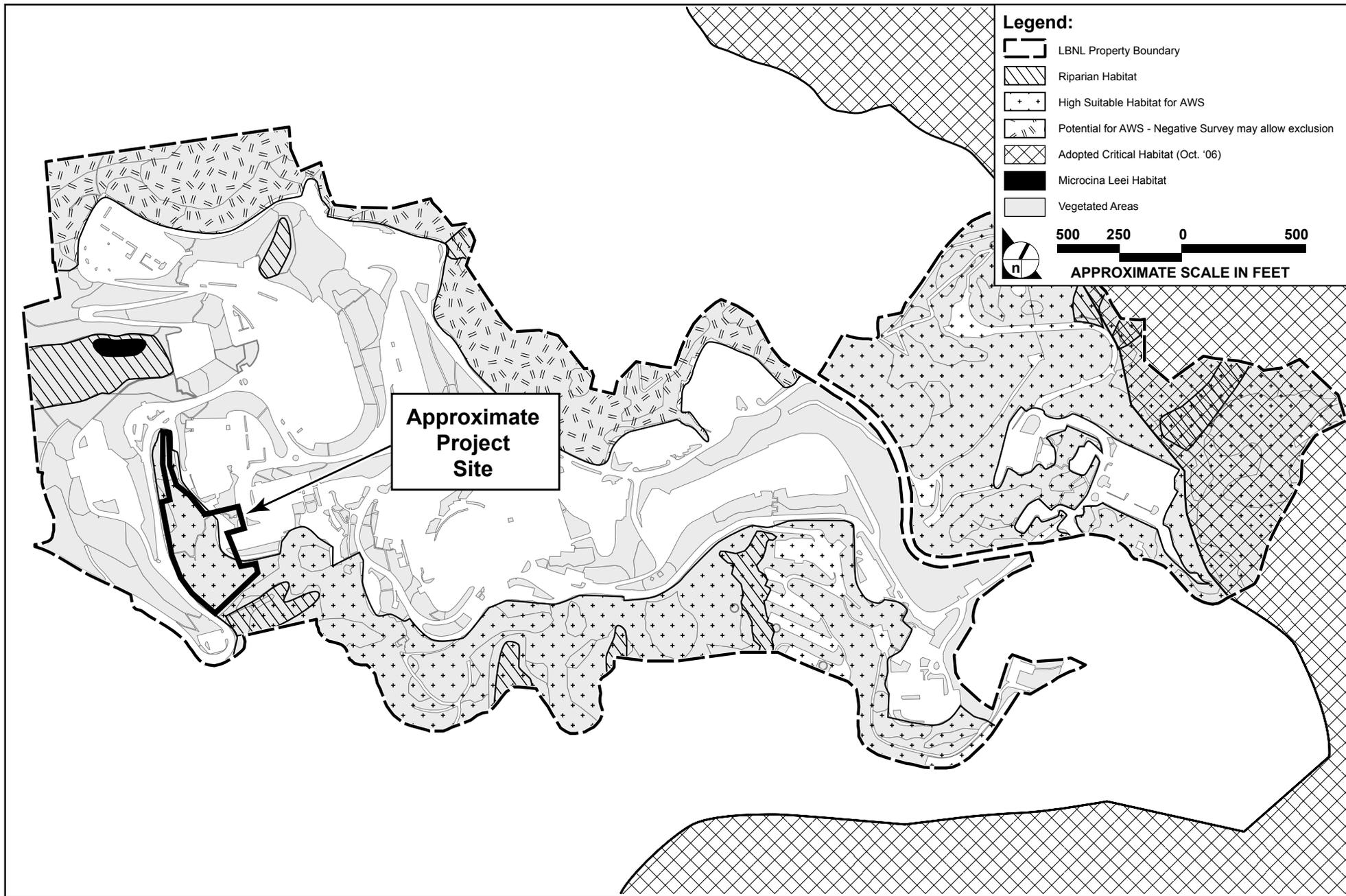
Cooper's hawk (*Accipiter cooperi*) is a California Species of Special Concern. The species ranges over most of North America and may be seen throughout California, most commonly as a winter migrant. Nesting pairs have declined throughout the lower-elevation, more populated parts of the state. Cooper's hawk forages in open woodlands and wooded margins and nests in tall trees, often in riparian areas (Ehrlich et al. 1988; Baicich 1997). This species has been observed foraging at LBNL (ESA 2003b). Coast live oak and eucalyptus trees on and adjacent to the project site may provide nesting habitat for the species.

Great Horned Owl

Great horned (*Bubo virginianus*) owl does not have any state or federal designation for rarity. However, for the purposes of this report, raptors are considered to be of special-status as they are specifically protected by Fish & Game Code Section 3503.5. Great horned owls occur throughout North America and are found in a variety of wooded habitats. These relatively common raptors prey on small to medium-sized mammals such as voles, rabbits, skunks, and squirrels. They roost and nest in large trees such as pines or eucalyptus and often use the abandoned nests of crows, ravens, or squirrels (Ehrlich et al. 1988; Sibley 2000). Great horned owls may use large eucalyptus and coast live oak trees located on and adjacent to the project site for roosting or nesting.

Red-Tailed Hawk

Red-tailed hawk (*Buteo jamaicensis*) does not have any state or federal designation for rarity. However, for the purposes of this report, raptors are considered to be of special-status as they are specifically protected by Fish & Game Code Section 3503.5. Red-tailed hawks are commonly found in woodlands and open country with scattered trees. These large hawks feed primarily on small mammals, but will also prey on other small vertebrates such as snakes and lizards, as well as on small birds and invertebrates. Red-tailed hawks nest in a variety of trees in woodland and agricultural habitats. This species is commonly observed foraging in the project area and large trees on and adjacent to the project site, including coast live oak and eucalyptus, may be used by red-tailed hawks for nesting.



SOURCE: Perkins+Will - September 2007, LBNL; ESA (2003); Swain Report - July 2006

FIGURE 4.3-2

Sensitive Habitat at LBNL

Red-shouldered Hawk

Red-shouldered hawk (*Buteo lineatus*) does not have any state or federal designation for rarity. However, for the purposes of this report, raptors are considered to be of special-status as they are specifically protected by Fish & Game Code Section 3503.5. Red-shouldered hawks are commonly found in a variety of woodland habitats. These small hawks feed primarily on small mammals and some reptiles and amphibians. Large trees on and adjacent to the project site, including coast live oak and eucalyptus, may be used by red-shouldered hawks for nesting. This species is commonly observed foraging in the project area.

American Kestrel

American kestrel (*Falco sparverius*) does not have any state or federal designation for rarity. However, for the purposes of this report, raptors are considered to be of special-status as they are specifically protected by Fish & Game Code Section 3503.5. This small member of the falcon family preys on small birds, small mammals, lizards, and insects. The kestrel is most common in open habitats, such as grasslands or pastures. This relatively common species has been observed foraging in grassland habitat at LBNL (ESA 2003b). American kestrels usually nest in tree cavities (Sibley 2001; Ehrlich et al. 1988) and the coast live oak and eucalyptus trees on and adjacent to the project site may provide nesting habitat for this species.

Allen's Hummingbird

Allen's hummingbird (*Salasphorus sasin*) is included on the most recent Special Animals List (CDFG 2006). This species inhabits chaparral, scrub, riparian, and woodland habitats that support nectar-producing plants. Insects and spiders are consumed as well. Potentially suitable nesting habitat for this species is present on and adjacent to the project site.

Pallid Bat

Pallid bat (*Antrozous pallidus*) is a California Species of Special Concern. This species is found from Mexico north through Oregon and Washington into Canada, in a variety of habitats. Roosting occurs in deep crevices on rock faces, buildings, bridges, and tree hollows (especially oaks). Pallid bat prey both aerially and terrestrially, on species such as Jerusalem crickets, moths, grasshoppers, June beetles, and scorpions. Mature trees occurring on and adjacent to the project site provide potentially suitable roosting habitat for this species.

Long-eared myotis

Long-eared myotis (*Myotis evotis*) is included on the most recent Special Animals List (CDFG 2006). This species inhabits nearly all types of brushlands, woodlands, and forests, but may show a preference for coniferous forests and woodlands. Roosts include caves, buildings, snags, and crevices in tree bark. Caves provide night roosts. This species is highly maneuverable in its forays for arthropods over water, open terrain, and in habitat edges. Eucalyptus and coast live oak trees on and adjacent to the project site provide potential roosting habitat for long-eared myotis.

Fringed Myotis

Fringed myotis (*Myotis thysanodes*) is included on the most recent Special Animals List (CDFG 2006). This species occurs throughout California and is most frequent in coastal and montane forests and near mountain meadows (Jameson and Peeters 1988). This species uses echolocation to find moths, beetles, and other prey and forms nursery colonies in caves and old buildings (Jameson and Peeters 1988). Fringed myotis often use separate day and night roosts. Trees on and adjacent to the project site provide potential roosting habitat for fringed myotis.

Special-Status Plant Species

A thorough review and analysis of special-status plant species, listed by the USFWS (2005), CDFG (2005, 2007), and CNPS (2005, 2007) databases as occurring in the project vicinity, indicate that the likelihood of adverse project impacts for most of the species listed is extremely low for the following reasons:

- Suitable habitat for the species either never existed on the project site or no longer exists due to historical and ongoing disturbance of soils and vegetation;
- The species is not documented within the general vicinity of the project site (i.e., the western side of the Oakland-Berkeley hills);
- Only historical occurrences for the species are documented from the area; or
- The species has been extirpated from the quadrangle or county.

Generally, the potential for special-status plant species to occur at LBNL is low; none have been observed in past environmental studies for LBNL, and none were observed during recent general biological resource surveys (ESA 2002a-c, 2003a-c). LBNL has been subject to ongoing disturbance, first in the form of grazing and then in the form of development, for the past 200 years. These types of disturbance, combined with the introduction of highly competitive non-native plant species, have resulted in the extirpation of a number of plant species that were documented in the Berkeley area in the late 1800s and

early 1900s. LBNL aggressively manages vegetation on virtually the entire site for fire protection. Therefore, both coastal scrub habitat and stands of eucalyptus and French broom have converted to grassland in recent years. Although small areas of patchily distributed native grasses remain scattered throughout LBNL, the native herbaceous species observed in these areas are those that are commonly found throughout the Oakland-Berkeley hills (ESA 2002a-c, 2003a-c). Generally, rarer species in the hills tend to be found on serpentine or other ultramafic soils or on thin soils, such as occur in road cuts, where non-native species do not compete as readily. These types of soils were not observed at LBNL during ESA's field surveys.

However, the following grassland, coastal scrub, and woodland species were determined to have some potential to occur on LBNL given the presence of some suitable habitat: (1) big-scale balsamroot, (2) Diablo helianthella, (3) large-flowered leptosiphon, (4) Oregon meconella, and (5) robust monardella. The listing status, habitat requirements, and blooming period of these species are summarized in Table 4.3-1.

Focused surveys during the peak blooming period (i.e., spring, early summer) for special-status plant species have not been conducted on the CRT project site. However, a floristic inventory was conducted by Pacific Biology on June 28, 2007, which included a site-specific evaluation of the suitability of on-site habitats for special-status plant species. No special-status plant species were observed and a list of all common plant species identified is included in Appendix 4.3. It was concluded that it is highly unlikely that any special-status plant species occur on the project site based on the generally disturbed condition and types of habitats present (see Plant Communities). Also, many of the target special-status plant species (i.e., big-scale balsamroot, Diablo helianthella, and robust monardella) would have been visible and identifiable at the time of the survey if present due to their large size and persistence after flowering. The two remaining species—large-flowered leptosiphon and Oregon meconella—are smaller annual species. Large flowered leptosiphon is associated with sandy soils. In general, the soils on the site are loamy and it is highly unlikely the species would occur. Oregon meconella is typically associated with openings in shaded or wooded canyons. There were no such habitats on the site so it is also highly unlikely the species would occur.

Sensitive Plant Communities

The CNDDDB lists several sensitive plant communities as occurring in the project area, including northern maritime chaparral, serpentine bunchgrass, and purple needlegrass grassland. The CDFG also considers riparian plant communities and freshwater marsh and seep communities in a generally arid climate to be sensitive plant communities. No sensitive plant communities occur on the project site.

As previously discussed (see Plant Communities), purple needlegrass occurs in varying densities on the project site, with the highest density occurring in the southern portion of the project site (within the eucalyptus stand) where purple needlegrass provides 10 to 15 percent ground cover within an approximately 30 feet by 50 feet area. Given the relatively sparse occurrence of purple needlegrass throughout most of the understory, the relatively small size and isolated occurrence of the stand of purple needlegrass, and that the small stand of native grasses is within a eucalyptus stand, the understory is more accurately described as a mixed grassland and not a purple needlegrass grassland.

Sensitive plant communities occurring in proximity to the project site include the North Fork of Strawberry Creek and associated bay woodland and the small area of arroyo willow scrub associated with the Cafeteria Creek drainage just south of Blackberry Canyon Gate. While bay woodland is not always considered to be a riparian plant community, in this case it is associated with the North Fork of Strawberry Creek and associated hydrologic conditions. These plant communities were discussed in detail earlier in this section (see Nearby Plant Communities) and their locations relative to the project site are shown in Figure 4.3-1 and Figure 4.3-2.

Sensitive Habitat

The following habitats on the LBNL site are considered to be sensitive: (1) known habitat of Lee's micro-blind harvestman (*Microcina leei*); (2) potential Alameda whipsnake habitat; (3) Critical Alameda whipsnake habitat, as adopted by USFWS in October 2006; and (4) riparian and wetland habitat that is potentially jurisdictional under federal or state law.

The location of the project site relative to these sensitive habitats is shown in Figure 4.3-2. As shown, the project site is located entirely within a sensitive habitat area identified as having "high potential for Alameda whipsnake." Please see Special-Status Wildlife, above, for further discussion of the potential use of the project site by Alameda whipsnake. Additionally, the project site is located near riparian habitats associated with the North Fork of Strawberry Creek and Cafeteria Creek to Strawberry Creek. Please see Nearby Plant Communities, above, for further discussion of these drainages and associated riparian habitat.

Known habitat for Lee's micro-blind harvestman occurs within the woodland associated with the North Fork of Strawberry Creek. This arachnid was first identified at LBNL in the 1960s and again in the 1980s. The species is only known from one other occurrence in Claremont Canyon (Briggs and Ubick 1989). Lee's micro-blind harvestman is currently listed as a special animal by the state (CDFG 2006). Although the species has no formal listing status, its known habitat at LBNL is designated as a fixed constraint under the 2006 LRDP and will continue to be protected from development.

Waters of the United States and Waters of the State

Wetlands, creeks, streams, and permanent and intermittent drainages are generally subject to the jurisdiction of the Army Corps of Engineers (ACOE) under Section 404 of the federal Clean Water Act. The CDFG generally has jurisdiction over these resources, as well as other aquatic features that provide an existing fish and wildlife resource pursuant to Sections 1602-1603 of the California Fish and Game Code. The CDFG asserts jurisdiction to the edge of any riparian-associated vegetation.

There are no “waters of the United States” (including wetlands) regulated by the ACOE or “waters of the State” regulated by the CDFG on the project site. However, the North Fork of Strawberry Creek and Cafeteria Creek (which are located near the project site, but outside of the project boundaries) are expected to be under ACOE and CDFG jurisdiction pursuant to Section 404 of the federal Clean Water Act and Sections 1602–1603 of the California Fish and Game Code. These drainages are discussed in more detail above (see Nearby Plant Communities).

4.3.3 Regulatory Considerations

Federal and State Laws and Regulations

Federal Endangered Species Act

Under the federal Endangered Species Act (FESA), the Secretary of the Interior and the Secretary of Commerce have joint authority to list a species as threatened or endangered (16 United States Code [USC] 1533[c]). Pursuant to the requirements of the FESA, an agency reviewing a proposed project within its jurisdiction must determine whether any federally listed or proposed species may be present in the project region, and whether the proposed project would result in a “take”⁶ of such species. The “take” provision of the FESA applies to actions that would result in injury, death, or harassment of a single member of a species protected under the Act. In addition, the agency is required to determine whether the project is likely to jeopardize the continued existence of any species proposed to be listed under the FESA, or result in the destruction or adverse modification of critical habitat for such species (16 USC 1536[3][4]). If it is determined that a project may result in the “take” of a federally listed species, a permit from the USFWS would be required under Section 7 or Section 10 of the federal Endangered Species Act.

⁶ “Take,” as applied in Section 9 of the FESA, means to “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect or to attempt to engage in any such conduct.” “Harass” is further defined by the USFWS (50 C.F.R. § 17.3) as an intentional or negligent act or omission that creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, and sheltering. “Harm” is defined as “an act which actually kills or injures wildlife.” This may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.

Section 7 applies if there is a federal nexus (e.g., the project is on federal land, the lead agency is a federal entity, a permit is required from a federal agency, or federal funds are being used). Section 10 applies if there is no federal nexus.

Substantial, adverse project-related impacts to FESA-listed species or their habitats would be considered significant in this EIR. Proposed species are granted limited protection under the Act and must be addressed in Biological Assessments (under Section 7 of the Act); proposed species otherwise have no protection from “take” under federal law, unless they are emergency-listed species. Candidate species are afforded no protection under the Act. However, the USFWS recommends that candidate species and species proposed for listing also be considered in informal consultation during a project’s environmental review.

Clean Water Act

The federal Water Pollution Control Act of 1972, often referred to as the Clean Water Act, is the nation’s primary law for regulating discharges of pollutants into waters of the United States. The objective of the Clean Water Act is to restore and maintain the chemical, physical, and biological integrity of the nation’s waters. The regulations adopted pursuant to the Act deal extensively with the permitting of actions in waters of the United States, including wetlands. The Act’s statutory sections and implementing regulations provide more specific protection for riparian and wetland habitats than any other federal law. The U.S. Environmental Protection Agency (U.S. EPA) has primary authority under the Clean Water Act to set standards for water quality and for effluents, but the ACOE has primary responsibility for permitting the discharge of dredge or fill materials into streams, rivers, and wetlands.

Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (16 USC, Section 703, Supplement I, 1989) prohibits killing, possessing, or trading in migratory birds, except in accordance with regulations prescribed by the Secretary of the Interior. The Act encompasses whole birds, parts of birds, and bird nests and eggs.⁷

California Endangered Species Act

Under the California Endangered Species Act (CESA), the CDFG has the responsibility for maintaining a list of threatened and endangered species (California Fish and Game Code Section 2070). The CDFG also

⁷ The act covers hundreds of birds, including varieties of loon, grebe, albatross, booby, pelican, cormorant, heron, stork, swan, goose, duck, vulture, eagle, hawk, falcon, fail, plover, avocet, sandpiper, phalarope, gull, tern, murre, puffin, dove, cuckoo, roadrunner, owl, swift, hummingbird, kingfisher, woodpecker, swallow, jay, magpie, crow, wren, thrush, mockingbird, vireo, warbler, cardinal, sparrow, blackbird, finch, and many others.

maintains a list of “candidate species,” which are species formally under review for addition to either the list of endangered species or the list of threatened species. In addition, the CDFG maintains lists of “species of special concern,” which serve as watch lists. Pursuant to the requirements of the CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any state-listed endangered or threatened species could be present on the project site and determine whether the proposed project could have a potentially significant impact on such species. In addition, the CDFG encourages informal consultation on any proposed project that may affect a candidate species. Project-related impacts to species on the CESA endangered or threatened lists would be considered significant in this EIR. Impacts to “species of concern” would be considered significant if the species met the criteria set forth under CEQA Guidelines Section 15380, or if the species were also protected under any of the other statutes or policies discussed in this section.

California Native Plant Protection Act

State listing of plant species began in 1977 with the passage of the California Native Plant Protection Act (NPPA), which directed the CDFG to carry out the legislature’s intent to “preserve, protect, and enhance endangered plants in this state.” The NPPA gave the California Fish and Game Commission the power to designate native plants as endangered or rare and to require permits for collecting, transporting, or selling such plants. The CESA expanded upon the original NPPA and enhanced legal protection for plants. The CESA established threatened and endangered species categories and grandfathered all rare animals—but not rare plants—into the act as threatened species. Thus, there are three listing categories for plants in California: rare, threatened, and endangered.

California Fish and Game Code

The California Fish and Game Code provides a variety of protections for species that are not federally or state-listed as threatened, endangered, or of special concern.

- Section 3503 protects all breeding native bird species in California by prohibiting the take,⁸ possession, or needless destruction of nests and eggs of any bird, with the exception of non-native English sparrows and European starlings (Section 3801).
- Section 3503.5 protects all birds of prey (in the orders Falconiformes and Strigiformes) by prohibiting the take, possession, or killing of raptors and owls, their nests, and their eggs.

⁸ “Take” in this context is defined in Section 86 of the California Fish and Game Code as to “hunt, pursue, catch, capture, or kill, or to attempt to hunt, pursue, catch, capture, or kill.”

- Section 3513 of the code prohibits the take or possession of migratory nongame birds as designated in the Migratory Bird Treaty Act or any parts of such birds except in accordance with regulations prescribed by the Secretary of the Interior.
- Section 3800 of the code prohibits the taking of nongame birds, which are defined as birds occurring naturally in California that are not game birds or fully protected species.
- Section 3511 (birds), Section 5050 (reptiles and amphibians), and Section 4700 (mammals) designate certain wildlife species as fully protected in California.

Local Plans and Policies

The proposed project would be located at LBNL, which is operated by the University of California and conducts work within the University's mission on land that is owned or controlled by The Regents of the University of California. As a state entity, the University is exempted by the state constitution from compliance with local land use regulations, including general plans and zoning. However, the University seeks to cooperate with local jurisdictions to reduce any physical consequences of potential land use conflicts to the extent feasible. LBNL is located in both the City of Berkeley and the City of Oakland. The following sections summarize objectives and policies from the LBNL 2006 LRDP and LBNL Design Guidelines, and other local plans that relate to biological resources. Policies in the City of Berkeley and City of Oakland General Plans related to biological resources are listed in Appendix 4.3.

2006 LRDP Principles and Strategies⁹

The 2006 LRDP proposes four fundamental principles that form the basis for the Plan's development strategies provided for each element of the Plan. The one principle most applicable to the biological aspect of new development is to "Preserve and enhance the environmental qualities of the site as a model of resource conservation and environmental stewardship."

Development strategies provided by the 2006 LRDP are intended to minimize potential environmental impacts that could result from implementation of the 2006 LRDP. Development strategies set forth in the 2006 LRDP applicable to biological resources include the following:

- Protect and enhance the site's natural and visual resources, including native habitats, riparian areas, and mature tree stands by focusing future development primarily within the already developed areas of the site.
- Continue to use sustainable practices in selection of plant materials and maintenance procedures.

⁹ While this Environmental Impact Report is a "stand alone" analysis that does not rely upon tiering from any programmatic CEQA document, Berkeley Lab does actively follow the 2006 Long Range Development Plan (LRDP) as a planning guide for Lab development. Accordingly, relevant 2006 LRDP principles, strategies, and design guidelines are identified in this section.

- Develop all new landscape improvements in accordance with the Laboratory's vegetation management program to minimize the threat of wildland fire damage to facilities and personnel.
- Utilize native, drought-tolerant plant materials to reduce water consumption; focus shade trees and ornamental plantings at special outdoor use areas.

LBNL Design Guidelines

The LBNL Design Guidelines were developed in parallel with the 2006 LRDP and were adopted by the Lab following The Regents' approval of the 2006 LRDP. The LBNL Design Guidelines provide specific guidelines for site planning, landscape and building design as a means to implement the 2006 LRDP's development principles as each new project is developed. The LBNL Design Guidelines provide the following specific planning and design guidance relevant to the biological resources related aspects of new development to achieve these design objectives:

- Projects or portions of projects which fall within the Rustic Landscape zones identified on the LRDP Landscape Framework Map shall provide new plantings consistent with this zone.
- Projects or portions of projects which fall within the Rustic Riparian Landscape zones identified on the LRDP Landscape Framework Map shall provide new plantings consistent with this zone.
- Projects or portions of projects which fall within the Ornamental Landscape zones identified on the LRDP Landscape Framework Map shall provide new plantings consistent with this zone.
- Minimize impacts of disturbed slopes.
- Create a cohesive identity across the Lab as a whole by following established precedents for new landscape elements.
- Minimize further increases in impermeable surfaces at the Lab.

UC Berkeley Strawberry Creek Management Plan

The Strawberry Creek Management Plan was originally prepared in 1987. The streams that dissect LBNL's slopes represent a significant portion of the upper Strawberry Creek watershed. The plan contains recommendations on best management practices for the Strawberry Creek watershed to control nonpoint-source pollution and reduce degradation of water quality. LBNL's has its own best management practices related to non-point-source pollution and reduction of degradation of water quality.

UC Berkeley Management Plan for Strawberry and Claremont Canyons

As outlined in the UC Berkeley 2020 LRDP policy, “Manage the Hill Campus Landscape to Reduce Fire and Flood Risk and Restore Native Vegetation and Hydrology Patterns,” UC Berkeley maintains an ongoing program of fire fuel management in the hill area adjacent to LBNL. While the treatment used in a given area is customized to address its specific conditions, including vegetation type, access, and proximity to roads and structures, in general the treatments are designed to meet one or more of the following goals:

- Reducing fuel load by removing dead material, reducing plant density, and favoring species with lower fuel content;
- Reducing horizontal spread by reducing fine fuel material and by separating dense clusters of vegetation with areas of lower fuel load; and
- Reducing vertical fire spread by increasing separation of understory and crown fuels.

Whenever feasible, campus fuel management projects include the selective replacement of high-hazard introduced species with native species: for example, the restoration of native grassland and oak-bay woodland through the eradication of invasive exotics (broom, acacia, pampas grass) and the replacement of aged Monterey pines and second growth eucalyptus.

4.3.4 Impacts and Mitigation Measures

Significance Criteria

The impact of the proposed project on biological resources would be considered significant if it would exceed the following Standards of Significance, in accordance with Appendix G of the CEQA Guidelines and the UC CEQA Handbook:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFG 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 CDFG or USFWS;
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (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 the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan; or
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

Issues Not Discussed Further

The Initial Study prepared for the CRT project found that there are no federally protected wetlands as defined by Section 404 of the Clean Water Act on the project site, and the project would therefore have no direct impact to such resources. The Initial Study also found that there are no native resident or migratory wildlife corridors or native wildlife nursery sites on the project site, and the proposed project would therefore have no impact to 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. Additionally, the Initial Study found that there is no adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan that covers the project site, and there would therefore be no impact with respect to this issue. These issues are not discussed further in this section.

Mitigation Measures included in the Proposed Project

The following mitigation measures, adopted as part of the 2006 LRDP, are required by the LRDP for the proposed project and are thus included as part of the proposed project. The analysis presented below evaluates environmental impacts that would result from project implementation following the application of these mitigation measures. These mitigation measures that are included in the project would be monitored pursuant to the Mitigation Monitoring and Reporting Plan that will be adopted for the proposed project.

LRDP MM BIO-2a: Future development under the 2006 LRDP shall avoid, to the extent feasible, the fill of potentially jurisdictional waters. Therefore, during the design phase of any future development project that may affect potentially jurisdictional waters, a preliminary evaluation of the project site shall be made by a qualified biologist to determine if the site is proximate to potentially jurisdictional waters and, if deemed necessary by the biologist, a wetlands delineation shall be prepared and submitted to the ACOE for verification. Most development projected under the 2006 LRDP would have no potential for impacts on jurisdictional waters. However, development in specific locations including Buildings S-2 and S-0, as well as Parking Structures and Lots PS-1 and PL-9 and Roads R-2 and R-5, could require fill of or create the potential for accidental discharges to jurisdictional

waters. It should be noted that the preferable form of mitigation recommended by the ACOE is avoidance of jurisdictional waters. To the extent practicable, new development under the 2006 LRDP shall be located so as to avoid the fill of jurisdictional waters.

LRDP MM BIO-2b: Any unavoidable loss of jurisdictional waters shall be compensated for through the development and implementation of a project-specific Wetlands Mitigation Plan. In the event that potential impacts to streams resulting from a 2006 LRDP development project are identified, compensation for loss of jurisdictional waters would be based on the ACOE-verified wetlands delineation identified in Mitigation Measure BIO-2a. During the permit application process for specific development project(s) with identified impacts on jurisdictional drainages or wetlands, LBNL would consult with the ACOE, CDFG, and Regional Water Quality Control Board regarding the most appropriate assessment and mitigation methods to adequately address losses to wetland function that could occur as a result of the development project(s). A project-specific wetland mitigation plan would be developed prior to project implementation and submitted to permitting agencies for their approval. The plan may include one or more of the following mitigation options: restoration, rehabilitation, or enhancement of drainages and wetlands in on-site areas that remain unaffected by grading and project development or off site at one or more suitable locations within the project region; creation of on-site or off-site drainages or wetlands at a minimum of a 1:1 functional equivalency or acreage ratio (as verified by the ACOE); purchase of credits in an authorized mitigation bank acceptable to the ACOE and CDFG; contributions in support of restoration and enhancement programs located within the project region (such as those operated by local non-profit organizations including the Friends of Strawberry Creek, the Urban Creeks Council, or the Waterways Restoration Institute); or other options approved by the appropriate regulatory agency at the time of the specific project approval.

All mitigation work proposed in existing wetlands or drainages on- or off-site shall be authorized by applicable permits.

LRDP MM BIO-2c: To the extent feasible, construction projects that might affect jurisdictional drainages and/or wetlands could be scheduled for dry-weather months.

Avoiding ground-disturbing activities during the rainy season would further decrease the potential risk of construction-related discharges to jurisdictional waters.

LRDP MM BIO-3: Direct disturbance, including tree and shrub removal or nest destruction by any other means, or indirect disturbance (e.g., noise, increased human activity in area) of active nests of raptors and other special-status bird species (as listed in Table 4.3-1) within or in the vicinity of the proposed footprint of a future development project shall be avoided in accordance with the following procedures for Pre-Construction Special-Status Avian Surveys and Subsequent Actions. No more than two weeks in advance of any tree or shrub removal or demolition or construction activity involving particularly noisy or intrusive activities (such as concrete breaking) that will commence during the breeding season (February 1 through July 31), a qualified wildlife biologist shall conduct pre-construction surveys of all potential special-status bird nesting habitat in the vicinity of the planned activity and, depending on the survey findings, the following actions shall be taken to avoid potential adverse effects on special-status nesting birds:

1. Pre-construction surveys are not required for demolition or construction activities scheduled to occur during the non-breeding season (August 1 through January 31).
2. If pre-construction surveys indicate that no nests of special-status birds are present or that nests are inactive or potential habitat is unoccupied, no further mitigation is required.
3. If active nests of special-status birds are found during the surveys, a no-disturbance buffer zone will be created around active nests during the breeding season or until a qualified biologist determines that all young have fledged. The size of the buffer zones and types of construction activities restricted within them will be determined through consultation with the CDFG, taking into account factors such as the following:
 - a. Noise and human disturbance levels at the project site and the nesting site at the time of the survey and the noise and disturbance expected during the construction activity;
 - b. Distance and amount of vegetation or other screening between the project site and the nest; and
 - c. Sensitivity of individual nesting species and behaviors of the nesting birds.

4. Noisy demolition or construction activities as described above (or activities producing similar substantial increases in noise and activity levels in the vicinity) commencing during the non-breeding season and continuing into the breeding season do not require surveys (as it is assumed that any breeding birds taking up nests would be acclimated to project-related activities already under way). However, if trees and shrubs are to be removed during the breeding season, the trees and shrubs will be surveyed for nests prior to their removal, according to the survey and protective action guidelines 3a through 3c, above.
5. Nests initiated during demolition or construction activities would be presumed to be unaffected by the activity, and a buffer zone around such nests would not be necessary.
6. Destruction of active nests of special-status birds and overt interference with nesting activities of special-status birds shall be prohibited.
7. The noise control procedures for maximum noise, equipment, and operations identified in Section IV.I, Noise, of this EIR¹⁰ shall be implemented.

LRDP MM BIO-4: Project implementation under the 2006 LRDP shall avoid disturbance to the maternity roosts of special-status bats during the breeding season in accordance with the following procedures for Pre-Construction Special-Status Bat Surveys and Subsequent Actions. No more than two weeks in advance of any demolition or construction activity involving concrete breaking or similarly noisy or intrusive activities, that would commence during the breeding season (March 1 through August 31), a qualified bat biologist, acceptable to the CDFG, shall conduct pre-demolition surveys of all potential special-status bat breeding habitat in the vicinity of the planned activity. Depending on the survey findings, the following actions shall be taken to avoid potential adverse effects on breeding special-status bats:

1. If active roosts are identified during pre-construction surveys, a no-disturbance buffer will be created by the qualified bat biologist, in consultation with the CDFG, around active roosts during the breeding season. The size of the buffer will take into account factors such as the following:
 - a. Noise and human disturbance levels at the project site and the roost site at the time of the survey and the noise and disturbance expected during the construction activity;

¹⁰ Refers to 2006 LRDP EIR.

- b. Distance and amount of vegetation or other screening between the project site and the roost; and
 - c. Sensitivity of individual nesting species and the behaviors of the bats.
2. If pre-construction surveys indicate that no roosts of special-status bats are present, or that roosts are inactive or potential habitat is unoccupied, no further mitigation is required.
3. Pre-construction surveys are not required for demolition or construction activities scheduled to occur during the non-breeding season (September 1 through February 28).
4. Noisy demolition or construction activities as described above (or activities producing similar substantial increases in noise and activity levels in the vicinity) commencing during the non-breeding season and continuing into the breeding season do not require surveys (as it is assumed that any bats taking up roosts would be acclimated to project-related activities already under way). However, if trees are to be removed during the breeding season, the trees would be surveyed for roosts prior to their removal, according to the survey and protective action guidelines 1a through 1c, above.
5. Bat roosts initiated during demolition or construction activities are presumed to be unaffected by the activity, and a buffer is not necessary.
6. Destruction of roosts of special-status bats and overt interference with roosting activities of special-status bats shall be prohibited.
7. The noise control procedures for maximum noise, equipment, and operations identified in Section IV.I, Noise, of this EIR¹¹ shall be implemented.

LRDP MM BIO-5a: With the approval of the USFWS on a case-by-case basis, relocate any snake encountered during construction that is at risk of harassment; cease construction activity until the snake is moved to suitable refugium. Alternatively, submit a general protocol for relocation to the USFWS for approval prior to project implementation.

LRDP MM BIO-5b: Conduct focused pre-construction surveys for the Alameda whipsnake at all project sites within or directly adjacent to areas mapped as having high potential for whipsnake occurrence. Project sites within high potential areas shall be fenced to exclude snakes prior to project implementation. This would not include ongoing and non-site-specific activities such as fuel management.

¹¹ Refers to 2006 LRDP EIR.

Methods for pre-construction surveys, burrow excavation, and site fencing shall be developed prior to implementation of any project located within or adjacent to areas mapped as having high potential for whipsnake occurrence. Such methods would be developed in consultation or with approval of USFWS for any development taking place in USFWS officially designated Alameda whipsnake critical habitat. Pre-construction surveys of such project sites shall be carried out by a permitted biologist familiar with whipsnake identification and ecology (Swaim 2002). These are not intended to be protocol-level surveys but designed to clear an area so that individual whipsnakes are not present within a given area prior to initiation of construction. At sites where the project footprint would not be contained entirely within an existing developed area footprint and natural vegetated areas would be disturbed, any existing animal burrows shall be carefully hand-excavated to ensure that there are no whipsnakes within the project footprint. Any whipsnakes found during these surveys shall be relocated according to the Alameda Whipsnake Relocation Plan. Snakes of any other species found during these surveys shall also be relocated out of the project area. Once the site is cleared, it shall then be fenced in such a way as to exclude snakes for the duration of the project. Fencing shall be maintained intact throughout the duration of the project.

- LRDP MM BIO-5c: (1) A full-time designated monitor shall be employed at project sites that are within or directly adjacent to areas designated as having high potential for whipsnake occurrence, or (2) Daily site surveys for Alameda whipsnake shall be carried out by a designated monitor at construction sites within or adjacent to areas designated as having moderate potential for whipsnake occurrence.

Each morning, prior to initiating excavation, construction, or vehicle operation at sites identified as having moderate or high potential for whipsnake occurrence, the project area of applicable construction sites shall be surveyed by a designated monitor trained in Alameda whipsnake identification to ensure that no Alameda whipsnakes are present. This survey is not intended to be a protocol-level survey. All laydown and deposition areas, as well as other areas that might conceal or shelter snakes or other animals, shall be inspected each morning by the designated monitor to ensure that Alameda whipsnakes are not present. At sites in high potential areas the monitor shall remain on site during construction hours. At sites in moderate potential areas the monitor shall remain on-call

during construction hours in the event that a snake is found on site. The designated monitor shall have the authority to halt construction activities in the event that a whipsnake is found within the construction footprint until such time as threatening activities can be eliminated in the vicinity of the snake and it can be removed from the site by a biologist permitted to handle Alameda whipsnakes. The USFWS shall be notified within 24 hours of any such event.

LRDP MM BIO-5d: Alameda whipsnake awareness and relevant environmental sensitivity training for each worker shall be conducted by the designated monitor prior to commencement of on-site activities. All on-site workers at applicable construction sites shall attend an Alameda whipsnake information session conducted by the designated monitor prior to beginning work. This session shall cover identification of the species and procedures to be followed if an individual is found on site, as well as basic site rules meant to protect biological resources, such as speed limits and daily trash pickup.

LRDP MM BIO-5e: Hours of operation and speed limits shall be instituted and posted. All construction activities that take place on the ground (as opposed to within buildings) at applicable construction sites shall be performed during daylight hours, or with suitable lighting so that snakes can be seen. Vehicle speed on the construction site shall not exceed 5 miles per hour.

LRDP MM BIO-5f: Site vegetation management shall take place prior to tree removal, grading, excavation, or other construction activities. Construction materials, soil, construction debris, or other material shall be deposited only on areas where vegetation has been mowed.

Areas where development is proposed under the 2006 LRDP are subject to annual vegetation management involving the close-cropping of all grasses and ground covers; this management activity would be performed prior to initiating project-specific construction. Areas would be re-mowed if grass or other vegetation on the project site becomes high enough to conceal whipsnakes during the construction period. In areas not subject to annual vegetation management, dense vegetation would be removed prior to the onset of grading or the use of any heavy machinery, using goats, manual brush cutters, or a combination thereof.

LRDP MM BIO-6a: Floristic surveys for special-status plants shall be conducted at specific project sites where suitable habitat is present. Floristic surveys shall also be conducted in designated Perimeter Open Space. All occurrences of special-status plant populations, if any, shall be mapped.

Although no special-status plants have been observed at LBNL during past biological resource surveys, the distribution and size of plant populations often vary from year to year, depending on climatic conditions. Therefore, a baseline survey of all non-developed areas, including the designated Perimeter Open Space areas, where there is potential for future development or vegetation management activities, should be conducted in accordance with USFWS and CDFG guidelines by a qualified botanist during the period of identification for all special-status plants. During this initial survey, any special-status plant populations found, as well as areas with high potential for supporting special-status plants (i.e., less disturbed areas, rock outcrops and other areas of thin soils, areas supporting a relatively high proportion of native plant species) would be identified and mapped. Thereafter, surveys of Perimeter Open Space areas where ongoing vegetation management (i.e., active vegetation removal to minimize potential wildland fire damage to facilities and personnel) activities would be undertaken, and that are mapped as supporting or having potential to support special-status plant species, would be conducted in April and June every five years.

In those proposed LRDP development sites where suitable habitat is present for special status species identified as having a moderate to high potential for occurrence, protocol-level rare plant surveys would be conducted prior to construction. Surveys should be conducted during the periods of identification for all species under consideration at each applicable development site, the timing and scope to be directed by a qualified botanist. During the initial survey, any special-status plant populations found, as well as all areas with high potential for supporting special-status plants (i.e., less disturbed areas, rock outcrops and other areas of thin soils, areas supporting a relatively high proportion of native plant species) would be identified and mapped.

LRDP MM BIO-6b: Seeds or cuttings shall be collected from sensitive plant species found within developable areas and open space and at risk of being any adversely affected, or sensitive plants found in these areas shall be transplanted.

If special-status plants are found during floristic surveys and are at risk of being adversely affected, a qualified botanist working in conjunction with an expert in native plant horticulture, CNPS, and CDFG, would collect seeds, bulbs, and cuttings for propagation and planting in specific project revegetation efforts as well as restoration of native habitat within designated Open Space. Perennial species could be transplanted, if found in undeveloped locations that have a high likelihood for future development. Due to its unreliability, translocation alone should not be relied upon as a sole means of mitigation; however, healthy individuals of any special-status plant species should be transplanted to areas of suitable habitat that are protected in perpetuity. The relocation sites may be located either on or off the LBNL hill site. If the areas for transplanting are located off site, they should be within a 20-mile radius of the project site. Plants should be relocated to areas with ecological conditions (slope, aspect, microclimate, soil moisture, etc.) as similar to those in which they were found as possible. Existing plants could also be held in containers for specific post-project revegetation efforts on site.

Project Impacts and Mitigation Measures

CRT Impact BIO-1: Construction of the proposed project would result in the permanent removal of 2.25 acres of vegetation. (Less than Significant)

Excavation, grading, and construction activities would result in the removal of approximately 2.25 acres of vegetation, including a eucalyptus stand and mixed grassland vegetation. Approximately 72 trees would be removed, including 64 eucalyptus, 5 coast live oak, 2 California bay, and 1 plum. About 40 trees are moderate to small in size (with trunk diameters less than 20 inches at breast height) while 32 trees (all eucalyptus) are relatively large with trunk diameters greater than 20 inches at breast height. More specifically, the diameter at breast height of the eucalyptus trees to be removed ranges from 12 inches to 33 inches; these trees are not native to the project area. The five coast live oak trees to be removed have diameters at breast height of 18, 12, 12, 10, and 10 inches, while the bay trees to be removed have diameters at breast height of 9 and 15 inches; these trees are native to the project area. Large groves of trees would be maintained near the project site (see Figure 4.3-1), including bay woodland associated with the North Fork of Strawberry Creek, oak woodland, eucalyptus stands, and conifer stands.

While the permanent loss of vegetation associated with the buildout of the Berkeley Lab (including the CRT project) could affect common wildlife species locally, the impact to vegetation types that are

common throughout the Oakland-Berkeley hills would be less than significant because of the existing abundance of these plant communities and associated common wildlife species. The plant communities to be removed as part of the proposed project are common on LBNL and the surrounding area and predominately include non-native plant species. The LBNL Construction Standards and Design Requirements require that all trees to be removed would be replaced at a 1:1 ratio. These replacement trees would be planted on the project site or greater LBNL campus. Additionally, incorporation of the LRDP Development Principles and Design Guidelines, as well as the following best practices currently undertaken by the Lab in connection with development projects, would further reduce the degree of the impact. Among these practices are the following: revegetation of disturbed areas (not covered by active buildings or parking lots), including slope stabilization sites, using native shrubs, trees, and grasses is included as a part of all new projects to the extent feasible and in keeping with the Lab's vegetation management program. Invasive plant species and other undesirable plants, such as French broom, yellow star-thistle, and Italian thistle, are controlled as appropriate under the Laboratory's vegetation management program.

Mitigation Measure: No project-level mitigation measure required.

CRT Impact BIO-2: The proposed project would not result in indirect adverse effects to nearby creeks and seeps subject to ACOE and CDFG jurisdiction and also considered to be sensitive plant communities and habitats. (Less than Significant)

There are no creeks, seeps, wetlands or other features potentially subject to ACOE and/or CDFG jurisdiction on the project site. However, the North Fork of Strawberry Creek and known habitat for Lee's micro-harvestman occur 120 and 350 feet, respectively, to the north of the project site. Additionally, willow riparian scrub habitat associated with Cafeteria Creek occurs approximately 110 feet to the south of the project site. In the absence of avoidance measures, these habitats could be indirectly affected during construction of the proposed project. LBNL currently employs, and would continue to employ, a wide array of construction-period "best management practices" to minimize the potential for accidental discharges of fill or other materials into jurisdictional waters. Active management of construction-related stormwater flows from development sites is a standard part of contract specifications on all construction projects undertaken by LBNL. Construction projects incorporate control measures and are monitored to manage stormwater flows and potential discharge of pollutants. For example, LBNL's standard construction specifications include requirements for installation of erosion control netting and riprap to protect slopes and minimize adverse effects of runoff; protection of existing plant materials; application and maintenance of hydroseeding (sprayed application of seed and reinforcing fiber on graded slopes); no washout of concrete trucks to the storm drain system; and proper disposal of wastewater resulting from vehicle washing. LBNL also implements spill prevention and response programs to minimize

pollutants in runoff. Construction sites are replanted as soon as practicable following construction. In addition, the Lab's construction specifications require that contractors properly maintain construction vehicles to minimize fluid leaks and that construction equipment not be refueled in proximity to waterways. These ongoing programs would reduce the potential for accidental discharge during construction to adversely affect jurisdictional waters and sensitive plant communities/habitats. In addition to the employment of LBNL best management practices, LRDP Mitigation Measure BIO-2c (see above) is incorporated into the proposed project. The implementation of these measures would ensure that the potential impact on jurisdictional waters and sensitive plant communities/habitats from accidental discharges of fill or other deleterious substances would be less than significant.

Mitigation Measure: No project-level mitigation measure required.

CRT Impact BIO-3: The proposed project would not adversely affect special-status nesting birds (including raptors) such that nests are destroyed, they abandon their nests, or that their reproductive efforts fail. (Less than Significant)

The removal of trees from the project footprint has the potential to affect active special-status bird nests (including raptors). Additionally, any unusually loud noise levels generated by project construction activities have the potential to disturb raptors or other special-status birds nesting on or near the project site and to result in the abandonment of active bird nests. Based on the presence of suitable habitat on and near the project site, a number of raptors and other special-status bird species (see Table 4.3-1) should be considered as potentially present and possibly using the area for nesting. The loss of active nests of special-status bird species would be avoided through implementation of LRDP Mitigation Measure BIO-3 which involves pre-construction surveys and implementation of additional measures in case active nests are encountered (see above). The Berkeley Lab would also comply with the Migratory Bird Treaty Act and Section 3503 of the California Fish and Game Code. With the implementation of this measure, impacts to special-status nesting birds (including raptors) would be less than significant.

Mitigation Measure: No project-level mitigation measure required.

CRT Impact BIO-4: Removal of trees and other proposed construction activities during the breeding season would not result in direct mortality of special-status bats. In addition, construction noise could cause maternity roost abandonment and subsequent death of young. (Less than Significant)

Special-status bats that may occur on or near the project site include pallid bat, fringed myotis, and long-eared myotis. These bat species may use crevices in exfoliating tree bark and/or hollow cavities in trees

located on and near the project site for roosting. Therefore, the removal of trees from the project footprint could result in the destruction of special-status bat roosts and any unusually loud noise levels generated by project construction activities could result in the abandonment of an active maternity bat roost. The loss of active maternity roosts would be avoided through implementation of LRDP MM BIO-4 (see above), which is incorporated into the proposed project. The implementation of this measure would ensure that impacts to special-status bat species would be less than significant.

Mitigation Measure: No project-level mitigation measure required.

CRT Impact BIO-5: Construction of the proposed project would not result in take or harassment of Alameda whipsnake. (Less than Significant)

The project site is within an area of LBNL identified as having a “highly suitable potential habitat” for Alameda whipsnake (see Figure 4.3-2) (Swaim 2006). A qualified biologist evaluated the site-specific suitability of the project site for Alameda whipsnake on June 28, 2007. The project site is located within a eucalyptus grove, has a grassland understory, and does not contain scrub communities often associated with the Alameda whipsnake. However, the project site is near areas containing high-quality habitat for Alameda whipsnake. Specifically, coastal scrub habitats and open space along the south-facing slopes occur to the south of the project site. As such, when considered with nearby habitats, the project site may be part of a mosaic of habitats utilized by the species. While core habitat does not occur within the project boundary and Alameda whipsnake is not expected to permanently reside on the project site, the subspecies may temporarily occur on the site. Given the potential of Alameda whipsnake to occur on the project site, in the absence of the implementation of avoidance measures, the proposed project could result in the loss or harassment of the species during construction. LRDP MM BIO-5(a) through LRDP MM BIO-5(f) (see above) have been incorporated into the proposed project and would be implemented to ensure that the species is protected during project construction and that no loss of individual whipsnakes occurs. Implementation of these measures would ensure that impacts to Alameda whipsnake would be less than significant. Additionally, prior to project commencement, informal consultation will be conducted with the USFWS to determine if a permit would be required under the federal Endangered Species Act.

Mitigation Measure: No project-level mitigation measures required.

Table 4.3-1
Special-Status Species Documented in the Project Area

Common Name Scientific Name	Listing Status	General Habitat	Potential for Occurrence	Period of Identification
SPECIES LISTED OR PROPOSED FOR LISTING				
Invertebrates				
Bay checkerspot butterfly <i>Euphydryas editha bayensis</i>	FT/--/--	Serpentine bunchgrass grassland, larvae feed on <i>Plantago erecta</i>	Unlikely. Grasslands on the project site and greater LBNL do not occur on serpentinite and are not known to support larval host plants.	March–May
Callippe silverspot butterfly <i>Speyeria callippe callippe</i>	FE/--/--	Coastal areas in dunes, prairie, scrub, and grasslands supporting <i>Viola pedunculata</i>	Unlikely. Species' host plant is not known to occur in the grasslands on the project site or greater LBNL.	Spring
Fish				
Central California coastal steelhead <i>Oncorhynchus mykiss</i>	FT/CSC/--	Unblocked Bay Area and coastal rivers and streams	Unlikely. Strawberry Creek contains downstream barriers to migration of this species.	Year-round
Winter-run chinook salmon <i>Oncorhynchus tshawytscha</i>	FE/CE/--	Unblocked Bay Area and coastal rivers and streams	Unlikely. Strawberry Creek contains downstream barriers to migration of this species.	Winter
Amphibians				
California tiger salamander <i>Ambystoma californiense</i>	FT/CSC/--	Breed in ponds and vernal pools; occupies small mammal burrows in surrounding grassland habitats during most of the year	Unlikely. Suitable aquatic and upland habitat for this species is not present within the project area.	November–May

Common Name Scientific Name	Listing Status	General Habitat	Potential for Occurrence	Period of Identification
Amphibians (continued)				
California red-legged frog <i>Rana draytonii</i>	FT/CSC/--	Breed in stock ponds, pools, and slow-moving streams with emergent vegetation for escape cover and egg attachment	Unlikely. Suitable aquatic habitat does not occur on the project site; the North Fork of Strawberry Creek (which is located near the project site) has a dense canopy, is steeply incised, and does not provide suitable habitat for the species. No occurrences of the species are reported within several miles of the project site (CNDDDB 2007).	May–November
Reptiles				
Alameda whipsnake <i>Masticophis lateralis euryxanthus</i>	FT/CT/--	Inhabits open to partially open scrub communities, including coyote bush scrub and chamise chaparral on primarily south-facing slopes	High potential. The preferred habitat for this species is not present within the project boundaries. However, suitable habitat occurs near the site (i.e., scrub habitats) and the project site is part of a mosaic of habitats potentially utilized by the species. While it is unlikely that permanently occupied territory is present on site, the species may disperse through the site. The site is within an area identified as having “highly suitable potential habitat” for the species (Swaim 2006).	Spring

Common Name Scientific Name	Listing Status	General Habitat	Potential for Occurrence	Period of Identification
Birds				
American peregrine falcon <i>Falco peregrinus</i>	Delisted/CE/--	Forages in marshes and grasslands; nesting habitat includes high, protected cliffs and ledges near water	Unlikely. Suitable nesting habitat is not present in the project area. May forage in the project area.	Year-round
Bald Eagle <i>Haliaeetus leucocephalus</i>	FT/CE/--	Nests and forages on inland lakes, reservoirs, and rivers; winter foraging at lakes and along major rivers	Unlikely. Suitable foraging or nesting habitat is not present in the project area.	Winter
Plants				
Large-flowered fiddleneck <i>Amsinckia grandiflora</i>	FE/CE/1B.1	Valley grassland, foothill woodland, annual grassland	Low potential. Project site contains marginally suitable habitat and only three natural occurrences are known, the nearest in east Alameda County (CNPS 2005).	April–May
Pallid manzanita <i>Arctostaphylos pallida</i>	FT/CE/1B.1	Broadleaved upland forest, cismontane woodland, closed-cone coniferous forest, chaparral, and coastal scrub; found in siliceous shale, sandstone, or gravelly substrates	Unlikely. The project site does not contain suitable soils for this species. Species is readily recognizable and was not seen during recent or past field surveys.	December–March
Robust spineflower <i>Chorizanthe robusta</i> var. <i>robusta</i>	FE/--/1B.1	Sandy or gravelly openings in cismontane woodland; also coastal dunes and coastal scrub	Unlikely. Suitable soils not present. Not seen in Alameda or adjacent counties since the 1890s; presumed extirpated in Bay Area (CNPS 2005).	April–September
Presidio clarkia <i>Clarkia franciscana</i>	FE/CE/1B.1	Serpentine outcrops in coastal scrub and valley and foothill grassland	Unlikely. Suitable habitat is not present, as the site does not contain serpentine outcrops.	May–July

Common Name Scientific Name	Listing Status	General Habitat	Potential for Occurrence	Period of Identification
Plants (continued)				
Santa Cruz tarplant <i>Holocarpha macradenia</i>	FT/CE/1B.1	Light, sandy, or sandy clay soil in coastal prairie and scrub and in valley and foothill grassland; often with non-native associates	Unlikely. Marginally suitable habitat is present on the project site. Not observed during recent field survey conducted during the species' blooming period. Naturally occurring populations have been extirpated from the Bay Area (CNPS 2005).	June–October
San Francisco popcorn flower <i>Plagiobothrys diffusus</i>	FSC/CE/1B.1	Coastal prairie and valley and foothill grassland	Low Potential. The project site provides marginally suitable habitat. Species known from fewer than 10 occurrences. Not observed during recent June survey.	April–June
FEDERAL BIRDS OF CONSERVATION CONCERN/STATE SPECIES OF SPECIAL CONCERN/ STATE SPECIAL ANIMALS				
Invertebrates				
Monarch butterfly <i>Danaus plexippus</i>	--/*/--	Winters in eucalyptus groves; winter roosting sites protected by the state	Low potential. Suitable habitat is present on site, but the species has not been documented wintering on LBNL or the surrounding project area.	Winter
Bridges' Coast Range shoulderband snail <i>Helminthoglypta nickliniana bridgesi</i>	--/*/--	Inhabits open hillsides; prefers rock piles but can be found under tall grasses and weeds	Low potential. Preferred habitat is absent including rock piles and other suitable damp areas.	Year-round
Ricksecker's water scavenger beetle <i>Hydrochara rickseckeri</i>	--/*/--	Specific habitat requirements are unknown; requires calm, shallow water of ponds and streams	Unlikely. Suitable aquatic habitat is not present in the project area.	Unknown

Common Name Scientific Name	Listing Status	General Habitat	Potential for Occurrence	Period of Identification
Invertebrates (continued)				
Lee's micro-blind harvestman <i>Microcina leei</i>	--/*/--	Requires undisturbed rocks in native grasslands and woodlands	Unlikely. Suitable habitat is not present on the project site. Known to occur on LBNL in Blackberry Canyon, approximately 500 feet north of the project site.	Year-round
San Francisco lacewing <i>Nothochrysa californica</i>	--/*/--	Coastal scrub and woodlands	Low potential. Not generally associated with eucalyptus stands. The species is known to occur in woodland and coastal scrub habitat on LBNL in Strawberry Canyon; the project site is located within Blackberry Canyon.	January–July
Birds				
Cooper's hawk (nesting) <i>Accipiter cooperi</i>	--/CSC/--	Nests in riparian growths of deciduous trees and live oak woodlands	Moderate potential. Suitable nesting habitat is available on and bordering the project site.	March–July
Sharp-shinned hawk (nesting) <i>Accipiter striatus</i>	--/CSC/--	Nests in riparian growths of deciduous trees and live oaks	Low potential. The project site is located outside of the species' expected nesting range; could occur as a winter migrant.	March–July
Tricolored blackbird (nesting colony) <i>Agelaius tricolor</i>	BCC/CSC/--	Riparian thickets and emergent vegetation	Unlikely. Suitable nesting habitat is not present on or near the project site.	Spring
Grasshopper sparrow <i>Ammodramus savaannarum</i>	--/*/--	Dry, dense grasslands, especially with a variety of grasses and tall forbs and scattered shrubs	Low potential. Available grassland habitat is relatively small and fragmented; the species generally frequents areas that are more arid.	April–July

Common Name Scientific Name	Listing Status	General Habitat	Potential for Occurrence	Period of Identification
Birds (continued)				
Bell's sage sparrow <i>Amphispiza belli belli</i>	BCC/CSC/--	Inhabits arid areas with low, fairly dense stands of shrubs, including chamise chaparral and coastal sage scrub	Low potential. Suitable habitat is not present on project site; While potentially suitable scrub habitat is present near the project site, the species generally frequents areas that are more arid.	Year-round
Golden eagle (nesting and wintering) <i>Aquila chrysaetos</i>	BCC/CSC/CFP	Generally nests in remote areas in trees, on cliffs, rocky outcrops, and utility towers, mostly in hilly or mountainous terrain; prefers to forage in habitat with dense ground squirrel populations	Unlikely. Suitable nesting and foraging habitat is not present on or near the project site.	Year-round
Burrowing owl (burrow sites) <i>Athene cunicularia</i>	BCC/CSC/--	Nests in mammal burrows in open, lowland grasslands; also uses man-made structures	Unlikely. Suitable nesting habitat (i.e., small mammal burrows of adequate size) is not present on or near the project site.	February–June
Oak titmouse (nesting) <i>Baeolophus inornatus</i>	--*/--	Inhabits open oak woodlands and oak savannah	Low potential. Suitable habitat is not present; species is relatively rare on western slopes of East Bay hills due to generally high density of oak habitat.	Year-round
Great horned owl <i>Bubo virginianus</i>	--/3503.5/--	Often uses abandoned nests of corvids or squirrels; nests in large oaks, conifers, eucalyptus	Moderate potential. Suitable nesting habitat is present on the project site.	Year-round
Red-tailed hawk <i>Buteo jamaicensis</i>	--/3503.5/--	Usually nests in large trees, often in woodland or riparian deciduous habitats	Moderate potential. Suitable nesting habitat is present on the project site.	Year-round
Red-shouldered hawk <i>Buteo lineatus</i>	--/3503.5/--	Nest in a variety of woodland or riparian habitats	Moderate potential. Suitable nesting habitat is present on the project site.	Year-round

Common Name Scientific Name	Listing Status	General Habitat	Potential for Occurrence	Period of Identification
Birds (continued)				
Lark sparrow (nesting) <i>Chondestes grammacus</i>	--*/--	Inhabits sparse valley foothill hardwood, open mixed chaparral and brushy habitats, grasslands with scattered trees or shrubs	Unlikely. Suitable nesting habitat is not present on the project site as the canopy cover is too dense.	Year-round
Northern harrier (nesting) <i>Circus cyaneus</i>	--/CSC/--	Most commonly found foraging over marshes and open fields. Nests on slightly elevated ground or in thick vegetation.	Unlikely. Suitable nesting habitat is not present on or near the project site.	Year-round
Olive-sided flycatcher (nesting) <i>Contopus cooperi</i>	BCC/--/--	Inhabits open conifer or mixed woodlands; nests in large coniferous trees	Low potential. Preferred nesting habitat is not present on or adjacent to the project site; species is relatively rare in East Bay hills.	May–August
White-tailed kite (nesting) <i>Elanus leucurus</i>	--/CFP/--	Nests near wet meadows and open grasslands, in dense oak, willow, or other tree stands	Low potential. This species rarely seen in the Oakland-Berkeley hills likely due to the extent of woodland habitats and lack of large, open grasslands. Grasslands on and bordering the project site are relatively small and fragmented and unlikely to be used by the species.	March–July
California horned lark <i>Eremophila alpestris acita</i>	--/CSC/--	Nests and forages in short-grass prairie, mountain meadow, coastal plain, fallow fields, and alkali flats	Unlikely. Project site and nearby areas do not provide suitable habitat.	March–July
Merlin (wintering) <i>Falco columba rius</i>	BCC/CSC/--	Breeds outside California, inhabits coastlines, open grasslands, savannahs, and woodlands	Low potential. Does not nest in California; could infrequently occur as a winter migrant but available on-site habitat is marginal.	September–May

Common Name Scientific Name	Listing Status	General Habitat	Potential for Occurrence	Period of Identification
Birds (continued)				
American kestrel <i>Falco sparverius</i>	--/3503.5/--	Frequents generally open grasslands, pastures, and fields; primarily a cavity nester	Moderate potential. Potential nesting habitat available on and adjacent to the project site in cavities of mature trees.	Year-round
Yellow-breasted chat (nesting) <i>Icteria virens</i>	--/CSC/--	Nests in riparian corridors with willows or other dense foliage	Unlikely. No riparian habitat present within the project boundaries; limited extent of riparian vegetation present near the project makes nesting unlikely in the project area.	March–September
Loggerhead shrike (nesting) <i>Lanius ludovicianus</i>	BCC/CSC/--	Nests in shrublands and forages in open grasslands	Unlikely. Suitable open grassland habitat is not present on or adjacent to the project site.	March–September
Lewis' woodpecker (nesting) <i>Melanerpes lewis</i>	BCC/--/--	Nests in cavities of dead or burned out trees in open, deciduous, and conifer habitats with brushy understory	Unlikely. Project site is located outside of the species' expected nesting range and does not contain characteristic brush understory. Rarely occurs on the west side of East Bay hills in oak woodland habitat in winter.	Winter
Rufous hummingbird (nesting) <i>Selasphorus rufus</i>	BCC/--/--	Inhabits riparian areas, open woodlands, chaparral, and other habitat with nectar-producing flowers; breeding does not occur in San Francisco Bay Area.	Unlikely. Breeding does not occur in the San Francisco Bay Area; nectar producing flowers scarce or absent within the project boundaries.	February–April
Allen's hummingbird (nesting) <i>Selasphorus sasin</i>	--/*/--	Inhabits coastal scrub, valley foothill hardwood, and riparian habitats	Moderate potential. Trees and shrubs within and adjacent to the project site provide potential nesting habitat.	January–July

Common Name Scientific Name	Listing Status	General Habitat	Potential for Occurrence	Period of Identification
Birds (continued)				
Red-breasted sapsucker (nesting) <i>Sphyrapicus ruber</i>	--/*/--	Breeds in coastal forests of Northern California and Oregon	Unlikely. Does not breed in the area; could infrequently occur in winter.	November-March
California thrasher <i>Toxostoma redivivum</i>	--/*/--	Moderate to dense chaparral and scrub, open valley foothill riparian thickets	Unlikely. Suitable habitat not present within or adjacent to the project site.	Year-round
Mammals				
Pallid bat <i>Antrozous pallidus</i>	CSC/--	Day roosts include rock outcrops, mines, caves, hollow trees, buildings, and bridges. Recent research suggests high reliance on tree roosts.	Moderate potential. Suitable roosting habitat present on the site in mature trees.	March-August
Townsend's big-eared bat <i>Corynorhinus townsendii</i>	--/CSC/--	Inhabits a variety of habitats, requires caves, mines, or man-made structures for roosting	Low potential. Suitable roosting habitat is not present on or adjacent to the project site, but the species may forage in the area.	March-August
Berkeley Kangaroo rat <i>Dipodomys heermanni</i> <i>berkeleyensis</i>	--/*/--	Open, grassy hilltops and open spaces in chaparral and blue oak/gray pine woodland	Unlikely. Suitable habitat is not present on the project site; species is presumed extinct.	Year-round
Western mastiff bat <i>Eumops perotis</i>	--/CSC/--	Breeds in rugged, rocky canyons and forages in a variety of habitats	Low potential. Suitable roosting habitat is not present in the project area, but the species may forage in the area.	March-August
Long-eared myotis <i>Myotis evotis</i>	--/*/--	Inhabits woodlands and forests up to approximately 8,200 feet in elevation; roosts in crevices and snags	Moderate potential. Suitable foraging and roosting habitat is present on and adjacent to the project site.	March-August
Fringed myotis <i>Myotis thysanodes</i>	--/*/--	Inhabits a variety of woodland habitats, roosts in crevices or caves, and forages over water and open habitats	Moderate potential. Suitable foraging and roosting habitat is present on and adjacent to the project site.	March-August

Common Name Scientific Name	Listing Status	General Habitat	Potential for Occurrence	Period of Identification
Mammals (continued)				
San Francisco dusky-footed woodrat <i>Neotoma fuscipes annectens</i>	--/CSC/--	Forests with moderate canopy and moderate to dense understory	Unlikely. No woodrat nests were observed on the project site during recent field survey; marginally suitable habitat present.	Year-round
Plants				
Bent-flowered fiddleneck <i>Amsinckia lunaris</i>	--/--1B.2	Coastal bluff scrub, woodland, and valley and foothill grassland	<p>Low potential. Marginally suitable habitat is present on the project site, and records from Oakland-Berkeley hills are historic only.</p> <p>A focused search of the project site for the species was conducted on June 28, 2007. The search was conducted after the peak spring bloom (making identification of the species more difficult). However, the species would have been persistent or recognizable to genus or species if present. The species was not observed during the survey.</p>	March–June

Common Name Scientific Name	Listing Status	General Habitat	Potential for Occurrence	Period of Identification
Plants (continued)				
Big-scale balsamroot <i>Balsamorhiza macrolepis</i> var. <i>macrolepis</i>	--/--/1B.2	Woodland and valley and foothill grassland, sometimes on serpentine soils	<p>Low potential. Low-quality suitable habitat is present on the project site and serpentine soils are absent.</p> <p>A focused search of the project site for the species was conducted on June 28, 2007. The search was conducted after the peak spring bloom (making identification of the species more difficult). However, the species would have been persistent or recognizable to genus or species if present. The species was not observed during the survey.</p>	March-June
Mt. Diablo fairy-lantern <i>Calochortus pulchellus</i>	--/--/1B.2	Woody and shrubby slopes of chaparral, cismontane, and riparian woodland, and valley and foothill grassland	<p>Low potential. Marginally suitable habitat is present on the project site, and the species is not known from Oakland-Berkeley hills.</p> <p>A focused search of the project site for the species was conducted on June 28, 2007. The search was conducted after the peak spring bloom (making identification of the species more difficult). However, the species would have been persistent or recognizable to genus or species if present. The species was not observed during the survey.</p>	April-June

Common Name Scientific Name	Listing Status	General Habitat	Potential for Occurrence	Period of Identification
Plants (continued)				
Western leatherwood <i>Dirca occidentalis</i>	--/--/1B.2	On brushy slopes and mesic areas of chaparral, riparian woodland and forest, and broadleaf or coniferous forest	Unlikely. Marginal habitat present on the project site. This shrub would have been recognizable during the field survey and was not observed.	January–April
Round-leaved filaree <i>California macrophyllum</i>	--/--/1B.1	On clay soils in woodland and valley and foothill grasslands	Low potential. Marginal habitat is present on the project site; most regional collections are historic (CNPS 2005).	March–May
Diablo helianthella <i>Helianthella castanea</i>	--/--/1B.1	Broadleaf upland forest, cismontane woodland, chaparral, coastal scrub, riparian woodland, and valley and foothill grassland	Low potential. Low-quality suitable habitat is present on the project site. A focused search of the project site for the species was conducted on June 28, 2007. The search was conducted after the peak spring bloom (making identification of the species more difficult). However, the species would have been persistent or recognizable to genus or species if present. The species was not observed during the survey.	April–June
Fragrant fritillary <i>Fritillaria liliacea</i>	--/--/1B.2	Cismontane woodland, coastal prairie and scrub, valley and foothill grasslands, often on serpentine soils	Low potential. Serpentine or heavy clay soils are not present on the project site. The species is unlikely to be found on other soils.	February–April
Kellogg's horkelia <i>Horkelia cuneata</i> spp. sericea	--/--/1B.1	In sandy or gravelly openings of closed-cone coniferous forest, chaparral and coastal scrub	Low potential. Suitable habitat is not present on the project site. Presumed extirpated in Alameda County (USFWS 2005a).	April–September

Common Name Scientific Name	Listing Status	General Habitat	Potential for Occurrence	Period of Identification
Plants (continued)				
Large-flowered leptosiphon (linanthus) Leptosiphon grandiflorus (formerly Linanthus grandiflorus)	--/--/4.2	Cismontane woodlands, valley and foothill grassland, coastal scrub; associated with sandy soils	Low potential. Sandy soils (generally associated with the species) do not occur on the project site.	April–August
Oregon meconella Meconella oregana	--/--/1B.1	Coastal scrub and prairie	Low potential. Low- quality suitable habitat is present at LBNL and is absent from the project site. Known only from five occurrences, including Oakland East, Richmond, and Briones Valley quads.	March–April
Robust monardella Monardella villosa ssp. globosa	--/--/1B.2	In clay or sandy soils of coastal prairie and scrub, and valley and foothill grassland	Low potential. Low- quality suitable habitat is present on the project site. A focused search of the project site for the species was conducted on June 28, 2007. The species would have been persistent or recognizable if present. The species was not observed during the survey.	June–July
Most beautiful jewel- flower Streptanthus albidus ssp. peramoenus	--/--/1B.2	Ridges and slopes with chaparral, valley and foothill grassland, and woodland; on serpentine outcrops	Low potential. No serpentine soils or outcrops are present on the project site.	April–June

STATUS CODES:

High potential = High to moderate quality habitat present and site within the geographic range; species expected to occur.

Moderate potential = Low to moderate quality habitat present, or habitat suitable but not within species' reported geographic range.

Low potential = Habitat highly limited or only marginally suitable or species may not be reported within the region.

Unlikely = Habitat does not meet species requirements as currently understood in the scientific community, site not within currently known species distribution or range, and/or not identified during focused searches when (plant) species would have been identifiable.

Federal: (U.S. Fish and Wildlife Service)

FE = Listed as endangered (in danger of extinction) by the federal government
FT = Listed as threatened (likely to become endangered within the foreseeable future) by the federal government
PE/PT = Proposed for listing as endangered or threatened
FC = Candidate to become a proposed species

State: (California Department of Fish and Game)

CE = Listed as endangered by the State of California
CT = Listed as threatened by the State of California
CR = Listed as rare by the State of California (plants only)
CSC = California Species of Special Concern
CFP = California Fully Protected
* = Species designated as "Special Animals" by the state
3503.5 = California Fish and Game Code Section 3503.5, Protection for nesting species of Falconiformes (hawks) and Strigiformes (owls)

California Native Plant Society

List 1A = Plants presumed extinct in California
List 1B = Plants rare, threatened, or endangered in California and elsewhere
List 2 = Plants rare, threatened, or endangered in California but more common elsewhere
List 3 = Plants about which more information is needed
List 4 = Plants of limited distribution
An extension reflecting the level of threat to each species is appended to each rarity category as follows:
1 - Seriously endangered in California
2 - Fairly endangered in California
3 - Not very endangered in California

SOURCES: CalFlora 2003; CDFG 2004, 2007; CNPS 2006; USFWS 2005a; Zeiner et al. 1990.

4.3.6 References

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