

4.4 Biological Resources

This section analyzes the potential effects of the proposed 2021 LRDP on biological resources. The analysis is based on the *Biological Resources Constraints Report for Long Range Development Plan at University of California, Riverside* prepared for the campus by Psomas (2019; Appendix D). The report includes a literature review that was conducted to identify special-status plants, wildlife, and habitats that have been reported to occur in the vicinity of the survey area (the UCR campus), and a general plant and wildlife survey and assessment of potential jurisdictional waters that was conducted in December 2018.

4.4.1 Environmental Setting

MSHCP Jurisdictional Lands

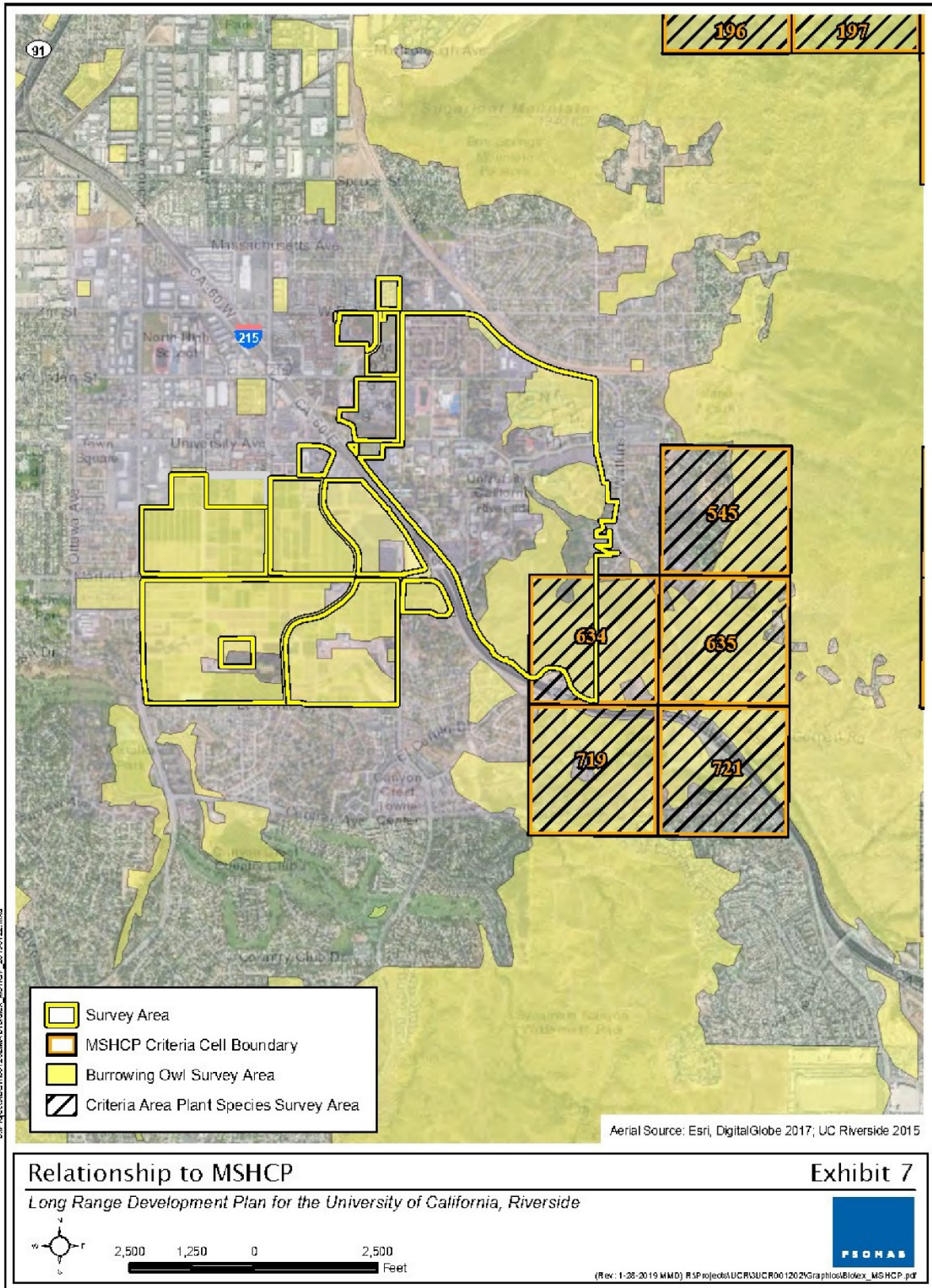
The Western Riverside County Regional Conservation Authority (RCA) was formed in 2004 to develop the Multiple Species Habitat Conservation Plan (MSHCP) to protect 146 native species of plants, birds, and animals, as well as to preserve a half-million acres of habitat (RCA n.d.). The MSHCP is a comprehensive, multi-jurisdictional plan that focuses on conservation of species and their associated habitats in Western Riverside County. The MSHCP allows participating jurisdictions to authorize the “take” of plant and wildlife species identified within the plan area. UCR is in the MSHCP area and has the option of utilizing the MSHCP as a Participating Special Entity (PSE).¹ If processing a project under the MSHCP, UCR would need to follow all aspects of the MSHCP for that project. However, if choosing not to process a project under the MSHCP, the project would have to be processed under traditional consultation and permitting mechanisms (Psomas 2019).

Pursuant to the MSHCP, the UCR campus is in the cities of Riverside and Norco, as well as in the Area Plan. The target conservation acreage range for this area plan is 3,465 to 3,615 acres. The southeast portion of the campus is part of the Area Plan Subunit 2: Sycamore Canyon – West. Biological issues and considerations for this Subunit include augmentation of conservation in Subunit 1 of the Highgrove Area Plan, conservation of grasslands adjacent to sage scrub to provide foraging habitat for raptors, maintenance of a linkage area for bobcat (*Lynx rufus*), and conservation of upland habitat supporting Bell’s sage sparrow (*Amphispiza belli belli*) and southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*). The planning species for this Subunit include Bell’s sage sparrow, loggerhead shrike (*Lanus ludovicianus*), southern California rufous-crowned sparrow, and bobcat.

Figure 4.4-1 shows the locations of the MSHCP Criteria Cells on and near the UCR campus. The southeast portion of East Campus is in an MSHCP Criteria Area, specifically Criteria Cell 634. Conservation in this cell will contribute to assembly of Proposed Constrained Linkage 7, which is the only connection between existing core habitat in Sycamore Canyon Wilderness Park to the southwest and existing noncontiguous habitat block A in the Box Springs Mountains to the northeast. Conservation in this cell is planned to focus on upland scrub habitat to connect upland scrub habitat proposed for conservation in Criteria Cell 635 to the east with Criteria Cell 719 to the south.

¹ A Participating Special Entity is any regional public facility provider (e.g., a utility company, a public district or agency) that operates and/or owns land within the MSHCP Plan Area and that applies for Take Authorization pursuant to Section 11.8 of the Implementing Agreement.

Figure 4.4-1 MSHCP Criteria Cells



Conservation in Criteria Cell 634 will be approximately 5 percent of the cell, focusing on the eastern portion of the Cell. Since the UCR campus boundary only extends over the western half of Criteria Cell 634, future development of this area as part of the proposed 2021 LRDP would not conflict with the conservation goals for Criteria Cell 634 (Psomas 2019).

The UCR campus is in western Riverside County, which includes the watersheds of the San Jacinto and Santa Ana Rivers, the Cleveland and Angeles National Forests, and federal wilderness and wildlife areas (County of Riverside 2015). Riverside's biological diversity supports an abundance of wildlife species and plant communities, particularly due to its arroyos. The arroyos of Riverside are naturally occurring ephemeral drainages created over thousands of years as seasonal rains eroded the hills. Natural runoff in addition to that from agriculture and development has created a year-round supply of water, and riparian plants flourish throughout the year in the arroyos. The canyons of the southern hillsides also provide valuable migratory corridors for wildlife. These migratory corridors are connected where two drainages pass near one another or at the confluence of different drainage swales (City of Riverside 2012).

Topography on the UCR campus is relatively flat with an elevation of approximately 1,000 to 1,100 feet above mean sea level. Topography in the southeast portion of the campus consists of gently sloping hills with a peak elevation of 1,548 feet above mean sea level. A variety of soils are mapped on campus, including loam and sandy loam soils of the Arlington, Buren, Cieneba, Gorgonio, Hanford, Madera, Monserate, Ramona, and Vista series and terrace escarpments (Psomas 2019).

Psomas biologists conducted a general plant and wildlife survey, mapped vegetation, and performed an assessment of potential jurisdictional waters on December 12, 2018 and December 13, 2018. The survey area includes the entire UCR campus.

Vegetation

On-campus vegetation can be described as natural, naturalistic, landscaped, and agricultural areas. For continuity, vegetation types mapped in the survey area were grouped into these broad categories. Nomenclature for vegetation types generally follows that of *A Manual of California Vegetation* (California Native Plant Society [CNPS] 2019). Generally, unvegetated areas were mapped as other areas and include basins, disturbed areas, and developed areas. Table 4.4-1 lists the vegetation types and other landcover mapped in the survey area. Figure 4.4-2 shows the locations of the vegetation types and other landcovers. Nomenclature of plant taxa conform to the *Special Vascular Plants, Bryophytes, and Lichens List* (California Department of Fish and Wildlife [CDFW] 2021a) for special-status species and the *Jepson eFlora* (Jepson Herbarium 2014) for all other taxa.

Natural Areas

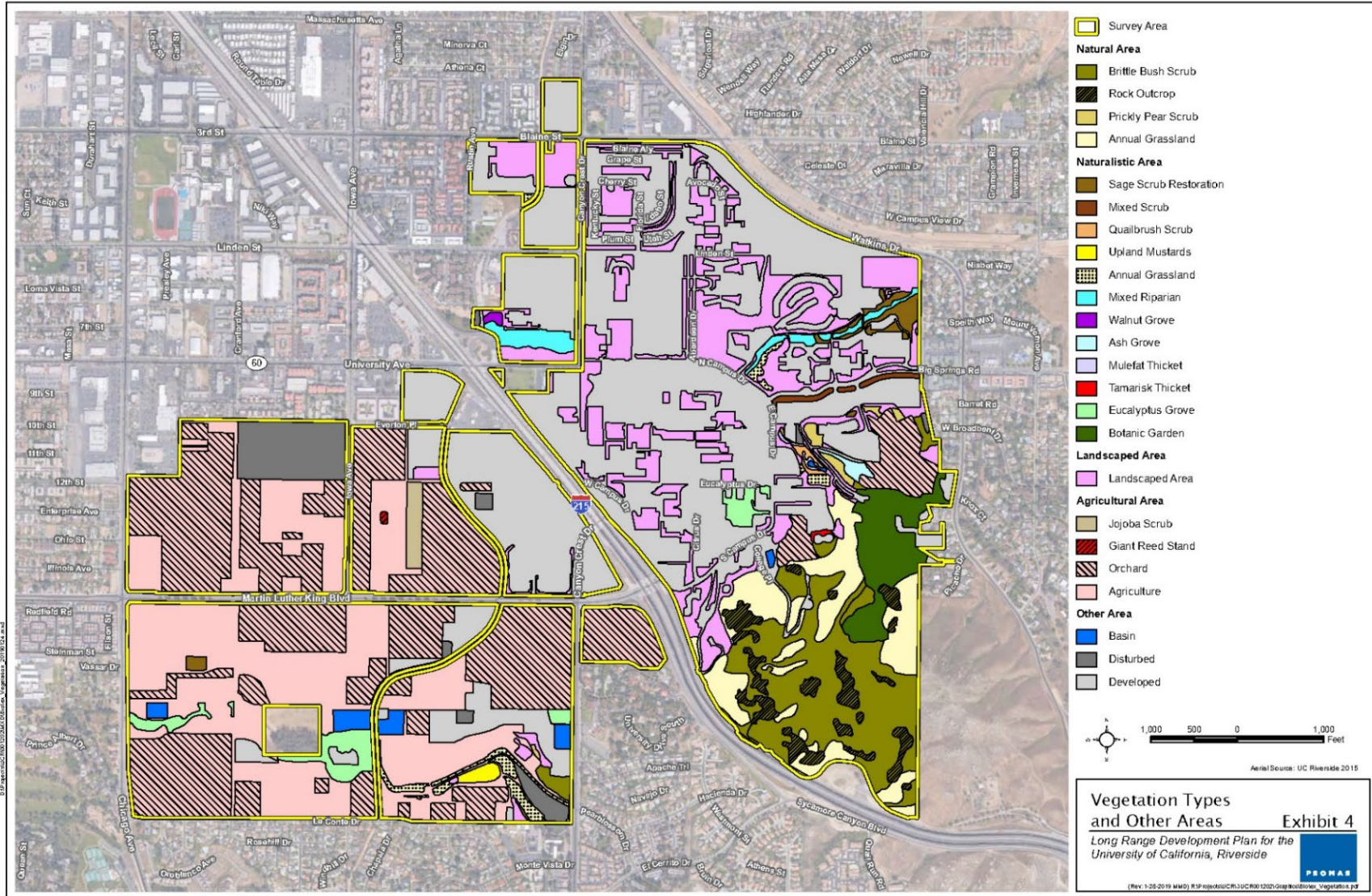
Natural areas are defined as undeveloped open space areas that are composed of native and naturally occurring plant species.

Table 4.4-1 Vegetation Types and Other Areas on the UCR Campus

Vegetation Type and Other Area	Approximate Amount in Survey Area (acres)	CNPS 2019 Equivalent	CDFW Sensitive Natural Community
Natural Areas			
Brittle Bush Scrub	65.73	<i>Encelia farinosa</i> Shrubland Alliance	No
Rock Outcrop	16.16	<i>Encelia farinosa</i> Shrubland Alliance	No
Prickly Pear Scrub	2.75	<i>Opuntia littoralis</i> – <i>Opuntia oricola</i> – <i>Cylindropuntia prolifera</i> Shrubland Alliance	Yes
Annual Grassland	42.40	Varies, including the <i>Bromus (diandrus, hordeaceus)</i> – <i>Brachypodium distachyon</i> , Herbaceous Semi-natural Alliance, <i>Bromus rubens</i> – <i>Schismus (arabicus, barbatus)</i> , Herbaceous Semi-natural Alliance, or <i>Avena (barbata, fatua)</i> Herbaceous Semi-natural Alliance	No
Naturalistic Areas			
Sage Scrub Restoration	5.96	Not a natural community; similar to various shrubland Alliances including <i>Artemisia californica</i> , <i>Eriogonum fasciculatum</i> , and <i>Salvia mellifera</i> Shrubland Alliances	Not a natural community; not sensitive
Mixed Scrub	2.31	Not a natural community; similar to <i>Isocoma menziesii</i> Shrubland Alliance associated with non-native shrubs	Not a natural community; not sensitive
Quailbush Scrub	1.08	<i>Atriplex lentiformis</i> Shrubland Alliance	No
Upland Mustards	1.80	No named equivalent, but functionally similar to the <i>Brassica nigra</i> – <i>Raphanus</i> spp. Herbaceous Semi-natural Alliance	No
Annual Grassland	8.13	Varies, including the <i>Bromus (diandrus, hordeaceus)</i> – <i>Brachypodium distachyon</i> , Herbaceous Semi-natural Alliance, <i>Bromus rubens</i> – <i>Schismus (arabicus, barbatus)</i> , Herbaceous Semi-natural Alliance, or <i>Avena (barbata, fatua)</i> Herbaceous Semi-natural Alliance	No
Mixed Riparian	8.26	Not a natural community; similar to various woodland Alliances such as <i>Salix gooddingii</i> and <i>Platanus racemosa</i> Woodland Alliances associated with non-native trees	Not a natural community; not sensitive
Walnut Grove	0.57	Not a natural community; similar to <i>Juglans californica</i> Woodland Alliance or <i>Juglans hindsii</i> and Hybrids Woodland Special Stands and Semi-natural Alliance.	Not a natural community; not sensitive
Ash Grove	1.52	Not a natural community, but functionally similar to the <i>Fraxinus latifolia</i> Forest Alliance	Not a natural community; not sensitive
Mulefat Thicket	0.58	<i>Baccharis salicifolia</i> Shrubland Alliance	No
Tamarisk Thicket	0.35	<i>Tamarix</i> spp. Shrubland Semi-natural Alliance	No
Eucalyptus Grove	13.96	<i>Eucalyptus</i> spp. – <i>Ailanthus altissima</i> – <i>Robinia pseudoacacia</i> Woodland Semi-natural Alliance	No
UCR Botanic Gardens	22.86	Not a natural community; no equivalent	No
Landscaped Areas			
Landscaped Areas	124.45	Not a natural community; no equivalent	No

Vegetation Type and Other Area	Approximate Amount in Survey Area (acres)	CNPS 2019 Equivalent	CDFW Sensitive Natural Community
Agricultural Areas			
Jojoba Scrub	4.28	Not a natural community; similar to the <i>Simmondsia chinensis</i> Provisional Shrubland Alliance	Not a natural community; not sensitive
Giant Reed Stand	0.25	<i>Phragmites australis</i> – <i>Arundo donax</i> , Herbaceous Semi-natural Alliance	No
Orchard	227.29	Not a natural community; no equivalent	No
Agriculture	165.22	Not a natural community; no equivalent	No
Other Areas			
Basin	7.07	Not a natural community; no equivalent	No
Disturbed	26.36	Not a natural community; no equivalent	No
Developed	377.59	Not a natural community; no equivalent	No
Total	1,126.93		
CNPS = California Native Plant Society, CDFW = California Department of Fish and Wildlife Source: Psomas 2019 (Appendix D)			

Figure 4.4-2 Vegetation Types and Other Areas



Source: Psomas 2019; Appendix D

BRITTLE BUSH SCRUB

Brittle bush scrub occurs on the hillsides and drainages in the southeast corner of the campus. This area is relatively undeveloped, with dirt and paved access roads and trails, storage structures, and incidental field research facilities. The dominant shrub is brittlebush (*Encelia farinosa*). Native shrubs present in lower amounts include California sagebrush (*Artemisia californica*) and California buckwheat (*Eriogonum fasciculatum*). Other scattered natives include wishbone bush (*Mirabilis laevis* var. *crassifolia*), filago-leaved sand-aster (*Corethrogyne filaginifolia*), phacelia (*Phacelia* sp.), and cryptantha (*Cryptantha* sp.). The shrub canopy is relatively open over most of the area. At the time of the survey, the understory and spaces between shrubs were either bare or contained annual species such as redstem filaree (*Erodium cicutarium*), eastern sisymbrium (*Sisymbrium orientale*), and non-native grasses (immature, but likely including species such as cheat grass [*Bromus tectorum*], rigpgut grass [*Bromus diandrus*], red brome [*Bromus madritensis* ssp. *rubens*], Mediterranean grass [*Schismus* sp.], or oat [*Avena* sp.]). Other annual understory species expected to occur based on previous documentation includes tidy-tips (*Layia platyglossa*), cream cups (*Platystemon californicus*), California poppy (*Eschscholzia californica*), ovate plantain (*Plantago ovata*), splendid mariposa lily (*Calochortus splendens*), and blue dicks (*Dichelostema capitatum*) (EIP 2005). Brittle bush scrub is not designated as a sensitive natural community (CDFW 2020).

ROCK OUTCROP

Rock outcrops occur throughout the hillsides in the southeast corner of the campus. These areas contain exposed granitic rock with many crevices and soil between individual rocks. Vegetation growing between the rocks is similar to that of the brittle bush scrub. Rock outcrop is not designated as a sensitive natural community (CDFW 2020).

PRICKLY PEAR SCRUB

Prickly pear scrub occurs naturally on the slopes along the UCR Botanic Gardens Road and in a small patch in the West Campus. It is dominated by Vasey's prickly pear (*Opuntia vaseyi*) with lesser amounts of cholla (*Cylindropuntia* sp.) and brittle bush. Prickly pear scrub is considered sensitive by the CDFW (CDFW 2020).

ANNUAL GRASSLAND

Annual grassland is patchily distributed on slopes in the southeastern corner of campus. Portions of this community contain existing dirt and paved access roads and trails, storage structures, and incidental field research facilities. This vegetation type is dominated by non-native grasses that were immature at the time of the survey conducted by Psomas. Species composition likely includes cheat grass, rigpgut grass, red brome, Mediterranean grass, and/or oat. *Redstem filaree* and *eastern sisymbrium* were also observed by Psomas in these areas. Other annual understory species expected to occur based on previous documentation includes common fiddleneck (*Amsinckia intermedia*), common goldenstar (*Bloomeria crocea*), baby blue eyes (*Nemophila menziesii*), and California croton (*Croton californicus*) (EIP 2005). It should be noted that annual grassland occurring in areas subject to disturbance (such as graded slopes) on the UCR campus are discussed below under Naturalistic Areas. Annual grassland is not designated as a sensitive natural community (CDFW 2020).

Naturalistic Areas

Naturalistic areas are defined as mostly undeveloped areas that have been subject to disturbance and modification or the introduction of ornamental trees and shrubs.

SAGE SCRUB RESTORATION

Sage scrub restoration occurs along the drainage in the eastern portion of the East Campus. It is considered a Naturalistic Area because the slopes have been modified, the vegetation has been planted, and the area is actively maintained. This vegetation type contains a mix of planted sage scrub species, including California sagebrush, California buckwheat, black sage (*Salvia mellifera*), brittle bush, coyote brush (*Baccharis pilularis* ssp. *consanguinea*), mule fat (*Baccharis salicifolia* ssp. *salicifolia*), and deer grass (*Muhlenbergia rigens*).

MIXED SCRUB

Mixed scrub occurs between Parking Lot 13 and Big Springs Road. It is considered a Naturalistic Area because the vegetation has been planted. This vegetation type contains a mix of native (e.g., coastal goldenbush [*Isocoma menziesii*] and California buckwheat) and non-native (primarily acacia [*Acacia* sp.]) shrubs along a potential drainage feature.

QUAILBUSH SCRUB

Quailbush scrub occurs on the slopes immediately surrounding the UCR Botanic Gardens basin. It is considered a Naturalistic Area because the slopes have been modified and the vegetation has been planted. This vegetation type is dominated by big saltbush (*Atriplex lentiformis*) with a lesser amount of mule fat and coastal goldenbush. Weedy, non-native species, such as grayish shortpod mustard (*Hirschfeldia incana*) and tree tobacco (*Nicotiana glauca*), are abundant. The slopes in this area are covered with an erosion control mat.

UPLAND MUSTARDS

Upland mustards occur on a slope in the West Campus. It is considered a Naturalistic Area because the slopes have been modified. This vegetation type is dominated by eastern sisymbrium, a non-native species.

ANNUAL GRASSLAND

Annual grassland occurring in areas subject to disturbance, such as graded slopes on the UCR campus, are considered Naturalistic Areas. This vegetation type is dominated by non-native grasses that were immature at the time of the survey. Species composition likely includes cheat grass, ripgut grass, red brome, Mediterranean grass, and/or oat.

MIXED RIPARIAN

Mixed riparian occurs along drainages in the East Campus. The riparian area in the eastern portion of the East Campus is considered a Naturalistic Area because the slopes have been modified and the vegetation has been planted as mitigation for a previous project (i.e., Glen Mor 2 Student Apartments Arroyo Improvements). This vegetation consists of a mix of riparian species such as Goodding's black willow (*Salix gooddingii*), arroyo willow (*Salix lasiolepis*), western sycamore (*Platanus racemosa*), Fremont cottonwood (*Populus fremontii* ssp. *fremontii*), Mexican palo verde

(*Parkinsonia aculeata*), and coast live oak (*Quercus agrifolia*). There is scattered mule fat in the drainage and along the banks. The understory of this vegetation type is generally open.

The riparian area along University Avenue is considered a Naturalistic Area because the area has been historically modified (i.e., historic aerial imagery from 1948 shows orchards in this area). This vegetation contains similar species as above, including Goodding's black willow, western sycamore, Fremont cottonwood, walnut (*Juglans* sp.), and mule fat. It also contains escapee ash trees such as shamel ash (*Fraxinus uhdei*) and velvet ash cultivars (*Fraxinus velutina*). The understory contains leaf litter and scattered species such as California blackberry (*Rubus ursinus*) and hoary nettle (*Urtica dioica* ssp. *holosericea*).

WALNUT GROVE

A walnut grove occurs in the northwestern portion of the East Campus. It is considered a Naturalistic Area, because it occurs on a graded parcel, and the vegetation likely consists of escapees.² This vegetation type consists of a stand of mature walnuts (likely a hybrid of southern California black walnut [*Juglans californica*], northern California black walnut [*Juglans hindsii*], or black walnut [*Juglans nigra*]).

ASH GROVE

An ash grove occurs in the eastern portion of East Campus. It is considered a Naturalistic Area because the vegetation likely consists of escapees. This vegetation type is dominated by shamel ash and velvet ash cultivars with lesser amounts of coast live oak, walnut, and mule fat. The understory contains leaf litter and scattered herbs such as petty spurge (*Euphorbia peplus*) and milk thistle (*Silybum marianum*).

MULEFAT THICKET

Mulefat thicket occurs around the basin in the UCR Botanic Gardens. It is considered a Naturalistic Area, because it is part of a manufactured basin. This vegetation type is dominated by mule fat, with scattered, immature red willow (*Salix laevigata*), arroyo willow, and Mexican palo verde; mugwort (*Artemisia douglasiana*) occurs in the understory.

TAMARISK THICKET

Tamarisk thicket occurs around water tanks at the edge of open space in the southeast corner of the East Campus. It is considered a Naturalistic Area, because it consists of non-native species. This vegetation is dominated by saltcedar (*Tamarix ramosissima*) with scattered brittlebush and an understory of non-native grasses.

EUCALYPTUS GROVE

Eucalyptus groves occur along drainages in West Campus and south of Eucalyptus Drive in East Campus. It is considered a Naturalistic Area, because it consists of non-native species. This vegetation type is dominated by mature gum trees (*Eucalyptus* spp.). Individual gum trees intermixed with other species are included as landscaped areas, described below.

² *Escapees* are cultivated plants that began growing wild through volunteer seedlings.

UCR BOTANIC GARDENS

The UCR Botanic Gardens is considered a naturalistic landscaped area. It contains a mix of native and non-native planted species, primarily from Mediterranean climates and arid areas similar to California, including geographical collections from Australia, Baja California, Mexico, South Africa, and temperate deciduous forests. Paved and unpaved trails in the gardens are not mapped separately. The UCR Botanic Gardens is mapped separately from landscaped areas on East Campus, because it has a more natural topography and generally lacks turf grass as a ground cover.

Landscaped Areas

Landscaped areas are considered open spaces that have been developed with turf-covered lawn areas or groundcover, mature trees, and shrubs. Landscaped areas occur throughout East Campus and consist of ornamental vegetation planted in open areas between buildings, in road medians, and along the edges of walkways and roads. This vegetation type includes a variety of mature trees such as jacaranda (*Jacaranda mimosifolia*), bottlebrush (*Melaleuca* sp.), gum tree, deodar cedar (*Cedrus deodara*), pepper tree (*Schinus molle*), Brazilian pepper tree (*Schinus terebinthifolius*), walnut, and coast live oak. Understory vegetation is limited. The primary groundcover is turf grass; other areas contain rock, leaf litter, bare ground, or mulch.

Agricultural Areas

Agricultural areas are used for agricultural teaching and research and are dominated by row crops and orchards.

JOJOBA SCRUB

Jojoba scrub occurs on a single plot in the Agricultural Area of West Campus. It is dominated by jojoba (*Simmondsia chinensis*) with scattered pepper trees around the edges of the plot. This was part of an experimental plot of Dr. Yermanos planted in the 1970s and 1980s (Psomas 2019)

GIANT REED STAND

Giant reed stand occurs in the Agricultural Area of West Campus. It consists of giant reed (*Arundo donax*) growing on debris piles in a fallow field.

ORCHARD

Orchards occur primarily on the West Campus but also in small areas on the East Campus. Trees, of varying levels of maturity, include different types of citrus (*Citrus* spp.), avocado (*Persea americana*), and European olive (*Olea europaea*).

Other Areas

Other areas include basins, disturbed areas, and developed areas. These areas are generally unvegetated, though they may include ornamental landscaping that is closely associated with a structure and smaller than the 0.25-acre minimum mapping unit.

BASIN

Basins occur throughout the West Campus, at the edge of the East Campus adjacent to undeveloped open space, and along the road to the UCR Botanic Gardens. The UCR Botanic Gardens basin is unlined but has concrete weirs and a concrete spillway. The center of the basin lacks vegetation and

contains built-up sediment, but the outer portion of the basin and banks are vegetated. This basin holds water intermittently. The other basins are unvegetated; some are concrete lined while others are soft bottomed. Based on a review of historic aerials, these basins appear to hold water for extended periods of time and/or year-round.

DISTURBED

Disturbed areas occur throughout the UCR campus and consist of bare ground that has been graded or otherwise altered. It should be noted that unpaved access roads (e.g., in the agricultural areas and the southeast corner of the campus) have not been mapped separately from the surrounding vegetation.

DEVELOPED

Developed areas occur throughout the campus and include structures (such as buildings, water tanks, greenhouses, etc.) and paved surfaces (such as paved roads and parking lots). Most developed areas occur on the East Campus. Water tanks occur in the southeast corner of East Campus, while various offices, greenhouses, and laboratories occur on the both East Campus and West Campus. Ornamental vegetation that is closely associated with these structures (i.e., not meeting the 0.25-acre minimum mapping unit) was not mapped separately.

Wildlife

The quality of wildlife habitat varies across the survey area. Natural areas (undeveloped areas with native vegetation) and naturalistic areas (larger areas of vegetation such as the UCR Botanic Gardens) provide relatively high-quality habitat. Landscaped areas (smaller patches of vegetation among developed areas) and the agricultural areas of West Campus provide moderate quality habitat. Densely developed areas with limited vegetation generally provide low-quality wildlife habitat. The presence of non-native vegetation, human activity, and surrounding urban development generally decrease the wildlife value relative to undisturbed areas. Wildlife species present are expected to be relatively urban-tolerant and acclimated to human activity. Wildlife detections were based on observations that occurred during the field survey by Psomas or that are expected to occur on the UCR campus based on presence of suitable habitat. Taxonomy and nomenclature for wildlife generally follows the *Special Animals List* (CDFW 2021b) for special-status species and other species; the Center for North American Herpetology (2015) for amphibians and reptiles; the American Ornithological Society (2018) for birds; and the Smithsonian National Museum of Natural History (2011) for mammals.

Fish and Amphibians

No fish species were observed during the biological survey by Psomas, and suitable aquatic habitat is minimal. The drainages are ephemeral and travel underground for portions of their length, so are not expected to provide fish habitat. The basins may hold introduced species, such as western mosquitofish (*Gambusia affinis*). No amphibian species were observed during the biological survey by Psomas. Common species that may occur on campus include Baja California treefrog (*Pseudacris hypochondriaca*) and American bullfrog (*Lithobates [=Rana] catesbeianus*).

Reptiles

The MSHCP does not identify any covered or special-status reptilian species as potentially occurring on the project site. Reptile species observed in the survey area include western fence lizard (*Sceloporus occidentalis*) and side-blotched lizard (*Uta stansburiana*). Other common reptile species expected to occur in the survey area include southern alligator lizard (*Elgaria multicarinata*), Belding's orange-throated whiptail (*Aspidoscelis hyperythra beldingi*), southern Pacific rattlesnake (*Crotalus oreganus helleri*), and gopher snake (*Pituophis catenifer*).

Birds

Bird species observed on or adjacent to the UCR campus include mallard (*Anas platyrhynchos*), ring-necked duck (*Aythya collaris*), hooded merganser (*Lophodytes cucullatus*), pied-billed grebe (*Podilymbus podiceps*), rock pigeon (*Columba livia*), white-throated swift (*Aeronautes saxatalis*), Anna's hummingbird (*Calypte anna*), Allen's hummingbird (*Selasphorus sasin*), American coot (*Fulica americana*), killdeer (*Charadrius vociferus*), great egret (*Ardea alba*), red-tailed hawk (*Buteo jamaicensis*), belted kingfisher (*Megaceryle alcyon*), Nuttall's woodpecker (*Picoides nuttallii*), black phoebe (*Sayornis nigricans*), Say's phoebe (*Sayornis saya*), Cassin's kingbird (*Tyrannus vociferans*), California scrub-jay (*Aphelocoma californica*), common raven (*Corvus corax*), bushtit (*Psaltriparus minimus*), house wren (*Troglodytes aedon*), blue-gray gnatcatcher (*Polioptila caerulea*), wrentit (*Chamaea fasciata*), hermit thrush (*Catharus guttatus*), northern mockingbird (*Mimus polyglottos*), American pipit (*Anthus rubescens*), house finch (*Haemorhous mexicanus*), lesser goldfinch (*Spinus psaltria*), spotted towhee (*Pipilo maculatus*), rufous-crowned sparrow (*Aimophila ruficeps*), California towhee (*Melospiza crissalis*), song sparrow (*Melospiza melodia*), white-crowned sparrow (*Zonotrichia leucophrys*), western meadowlark (*Sturnella neglecta*), great-tailed grackle (*Quiscalus mexicanus*), and yellow-rumped warbler (*Setophaga coronata*).

Mammals

No mammal species were directly observed during the survey by Psomas; however, evidence of mammal presence (e.g., scat, tracks, or burrows) was observed. California ground squirrel (*Otospermophilus beecheyi*) burrows, bobcat scat, coyote (*Canis latrans*) scat and tracks, and southern mule deer (*Odocoileus hemionus*) tracks were present in the survey area. Other mammal species that may occur include Botta's pocket gopher (*Thomomys bottae*), common raccoon (*Procyon lotor*), Virginia opossum (*Didelphia virginiana*), and striped skunk (*Mephitis mephitis*). Common bat species with potential to forage in the survey area include big brown bat (*Eptesicus fuscus*) and California myotis (*Myotis californicus*). Bats may also roost in trees, buildings, and rock crevices on campus.

Special-Status Species and Natural Communities

Special-status species are those plants and animals listed, proposed for listing, or candidates for listing as Threatened or Endangered by the U.S. Fish and Wildlife Service (USFWS) under the Federal Endangered Species Act (FESA), those considered Species of Concern by the USFWS, those listed or candidates for listing as Rare, Threatened, or Endangered by the CDFW under the California ESA (CESA) and Native Plant Protection Act, animals designated as Fully Protected by the California Fish and Game Code, animals listed as Species of Special Concern by the CDFW, CDFW Special Plants (specifically those with California Rare Plant Ranks [CRPR] of 1B, 2, 3, and 4 in the California Native Plant Society Inventory of Rare and Endangered Vascular Plants of California), and species identified as sensitive by the MSHCP (County of Riverside 2003).

Plants with a CRPR of 1B are rare throughout their range with the majority of them endemic to California. Most of the plants that are ranked 1B have declined substantially over the last century. CRPR 1B plants constitute the majority of taxa in the CNPS Inventory, with more than 1,000 plants assigned to this category of rarity. Plants with a CRPR of 2A are presumed extirpated³ because they have not been observed or documented in California for many years. This list only includes plants that are presumed extirpated in California but more common elsewhere in their range. Plants with a CRPR of 2B meet the requirements of 1B ranking within California but are common in other states or countries. Plants with a CRPR of 3 lack the necessary information to assign them to one of the other ranks or to reject them. Plants with a CRPR of 4 are of limited distribution or infrequent throughout a broader area in California, and their status is being monitored.

CRPR Ranks at each level also include a threat rank (e.g., CRPR 4.3) and are determined as follows: 0.1-Seriously threatened in California (over 80 percent of occurrences threatened/high degree and immediacy of threat), 0.2-Moderately threatened in California (20-80 percent of occurrences threatened/moderate degree and immediacy of threat), 0.3-Not very threatened in California (less than 20 percent of occurrences threatened/low degree and immediacy of threat or no current threats known).

Queries of the following databases were conducted for the United States Geological Service 7.5 Minute Riverside East quadrangle to obtain comprehensive information for federally- and State-listed species, sensitive communities, and federally-designated Critical Habitat known to or considered to have potential to occur on or near the UCR campus:

- California Natural Diversity Database (CDFW 2018)
- CNPS Online Inventory of Rare, Threatened, and Endangered Plants of California (CNPS 2019)
- Previous reports for the UCR campus

The literature search identified seven special-status plant species, 56 special-status wildlife species, and three special-status plant communities as having potential to occur in the vicinity of the UCR campus. Special-status plant and wildlife species were evaluated for their potential to occur within the LRDP boundaries based on habitat requirements, availability and quality of suitable habitat, and known distributions.

Special-Status Wildlife Species

Fifty-six special-status wildlife species have been reported in the vicinity of the survey area. Of these, 15 species are federally- and/or State-listed Endangered or Threatened or are candidates for listing:

- Santa Ana sucker (*Catostomus santaanae*)
- Steelhead – southern California Distinct Population Segment (*Oncorhynchus mykiss irideus* pop. 10)
- Riverside fairy shrimp (*Streptocephalus woottoni*)
- Delhi Sands flower-loving fly (*Rhaphiomidas terminates abdominalis*)
- Southern mountain yellow-legged frog (*Rana muscosa*)
- Swainson's hawk (*Buteo swainsoni*)
- Bald eagle (*Haliaeetus leucocephalus*)

³ A plant that is extirpated from California has been eliminated from California but may still occur elsewhere in its range.

- Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)
- California black rail (*Laterallus jamaicensis coturniculus*)
- Southwestern willow flycatcher (*Empidonax traillii extimus*)
- Least Bell's vireo (*Vireo bellii pusillus*)
- Coastal California gnatcatcher (*Polioptila californica californica*)
- Tricolored blackbird (*Agelaius tricolor*)
- San Bernardino kangaroo rat (*Dipodomys merriami parvus*)
- Stephens' kangaroo rat (*Dipodomys stephensi*)

Marginally suitable habitat for Riverside fairy shrimp occurs in the basins on campus. Marginally suitable habitat for least Bell's vireo occurs in the mixed riparian vegetation and the mulefat thicket in the survey area. Suitable habitat for coastal California gnatcatcher occurs in the brittle bush scrub, rock outcrops, sage scrub restoration, mixed scrub, and prickly pear scrub in natural and naturalistic areas on campus. Marginally suitable habitat for Stephens' kangaroo rat occurs in the annual grassland in natural areas on campus. Swainson's hawks may forage in the larger open space areas of campus as migrants but do not nest in the project region. The remaining listed species as being in the vicinity of the survey area are not expected to occur in the UCR Campus due to lack of suitable habitat.

In addition to species formally listed by the resource agencies, several special-status species (California Species of Special Concern [SSC], Watch List, and Fully Protected species) have been reported near the survey area. Species having potential to occur include western spadefoot (*Spea hammondi*), burrowing owl (*Athene cunicularia*), and Los Angeles pocket mouse (*Perognathus longimembris brevinasus*).

In addition, the following special-status species have potential or limited potential to occur in the survey area due to the presence of suitable or marginally suitable habitat:

- San Diego banded gecko (*Coleonyx variegatus abbottii*)
- Coast horned lizard (*Phrynosoma blainvillii*)
- Orange-throated whiptail
- Coastal whiptail (*Aspidoscelis tigris stejnegeri*)
- Southern California legless lizard (*Anniella stebbinsi*)
- California glossy snake (*Arizona elegans occidentalis*)
- Coast patch-nosed snake (*Salvadora hexalepis virgulata*)
- Two-striped garter snake (*Thamnophis hammondi*)
- Red-diamond rattlesnake (*Crotalus ruber*)
- White-tailed kite (*Elanus leucurus*)
- Cooper's hawk (*Accipiter cooperii*)
- Ferruginous hawk (*Buteo regalis*)
- Merlin (*Falco columbarius*)
- Loggerhead shrike
- Southern California rufous crowned sparrow
- Bell's sage sparrow
- Yellow-breasted chat (*Icteria virens*)
- Yellow warbler (*Setophaga petechia*)
- Northwestern San Diego pocket mouse (*Chaetodipus fallax fallax*)
- Southern grasshopper mouse (*Onychomys torridus ramona*)
- San Diego black-tailed jackrabbit (*Lepus californicus bennettii*)
- Western yellow bat (*Lasiurus xanthinus*)
- Pallid bat (*Antrozous pallidus*)
- American badger (*Taxidea taxus*)

For these non-listed species, impacts on a small amount of habitat (relative to the availability of habitat in the region) are not expected to reduce the regional population below a self-sustaining level. The remaining species reported from database searches are not expected to occur in the survey area due to lack of suitable habitat.

Burrowing Owl

The project site is partially within the MSHCP designated survey area for burrowing owl (refer to Figure 4.4-3). Burrowing owl is currently designated as a SSC. The burrowing owl is a grassland specialist distributed throughout western North America where it occupies open areas with short vegetation and bare ground within shrub, desert, and grassland environments. Suitable habitat for burrowing owl is present on the UCR campus. Burrowing owls use a wide variety of arid and semi-arid environments with level to gently sloping areas characterized by open vegetation and bare ground. The western burrowing owl (*A.c. hypugaea*), which occurs throughout the western United States including California, rarely digs its own burrows and is instead dependent upon the presence of burrowing mammals (i.e., California ground squirrels, coyotes, and American badgers [*Taxidea taxus*]), whose burrows are often used for roosting and nesting. The presence or absence of colonial mammal burrows is often a major factor that limits the presence or absence of burrowing owls. Where mammal burrows are scarce, burrowing owls have been found occupying man-made cavities, such as buried and non-functioning drainpipes, standpipes, and dry culverts. They also require low growth or open vegetation allowing line-of-sight observation of the surrounding habitat to forage and watch for predators. In California, the burrowing owl breeding season extends from the beginning of February through the end of August.

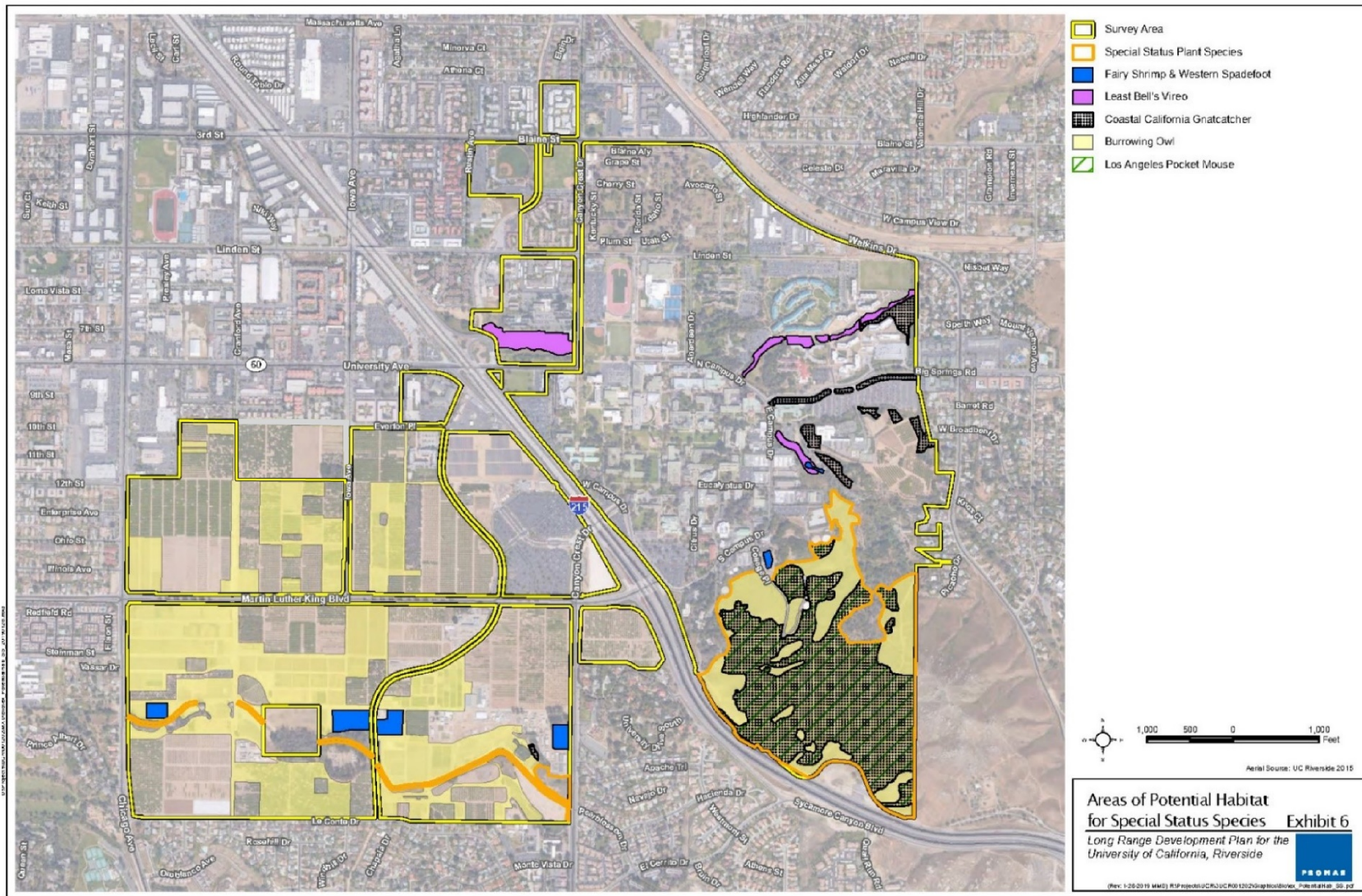
Special-Status Plant Communities

The CDFW provides a list of vegetation Alliances, Associations, and Special Stands that are considered “Sensitive Natural Communities” based on their rarity and threat (Psomas 2019). As discussed in Table 4.4-1, prickly pear scrub would be considered a sensitive natural community.

Special-Status Plant Species

Forty-one special-status plant species have been reported within 5 miles of the UCR campus. Of these, marginally suitable habitat for four federal and/or State-listed Endangered or Threatened species occurs within the naturally vegetated areas present in the study area. Munz’s onion (*Allium munzii*), San Diego ambrosia (*Ambrosia pumila*), Nevin’s barberry (*Berberis nevinii*), and slender-horned spineflower (*Dodecahema leptoceras*) all have low potential to occur in the UCR Campus (Psomas 2019).

Figure 4.4-3 Areas of Potential Habitat for Special-Status Species



Psomas 2019; Appendix D

Additionally, 14 species with a CRPR ranking of 1A, 1B, or 2B also have low potential to occur in the UCR campus. These 14 species are chaparral sand-verbena (*Abronia villosa* var. *aurita*), smooth tarplant (*Centromadia pungens* ssp. *laevis*), Parry's spineflower (*Chorizanthe parryi* var. *parryi*), long-spined spineflower (*Chorizanthe polygonoides* var. *longispina*), snake cholla (*Cylindropuntia californica* var. *californica*), many-stemmed dudleya (*Dudleya multicaulis*), mesa horkelia (*Horkelia cuneata* var. *puberula*), California satintail (*Imperata brevifolia*), Parish's desert-thorn (*Lycium parishii*), Brand's star phacelia (*Phacelia stellaris*), chaparral ragwort (*Senecio aphanactis*), salt spring checkerbloom (*Sidalcea neomexicana*), prairie wedge grass (*Sphenopholis obtusata*), and San Bernardino aster (*Symphyotrichum defoliatum*). One CRPR 4.3 species, Robinson's peppergrass (*Lepidium virginicum* ssp. *robinsonii*), has been observed within the southeastern portion of the study area, but plant species with a CRPR of 3 or 4 are not typically considered constraints on development. All the above-mentioned species have a low potential to occur within the naturally vegetated areas present in the study area (Psomas 2019).

Critical Habitat

Under the FESA, "Critical Habitat" is designated at the time of listing of a species or within 1 year of listing. Critical Habitat refers to specific areas within the geographical range of a species at the time it is listed that include the physical or biological features that are essential to the survival and eventual recovery of that species. Maintenance of these physical and biological features requires special management considerations or protection, regardless of whether individuals or the species are present or not. The UCR campus is not located in areas designated or proposed as Critical Habitat.

Potential Jurisdictional Resources

The National Wetlands Inventory (NWI) identified four basins in the West Campus; these are mapped as freshwater ponds classified as PUBK (i.e., in the Palustrine System with unconsolidated bottom and artificially flooded water regime). These artificial basins were also observed during the field survey and contain surface water. They are potential jurisdictional resources under the Porter-Cologne Water Quality Control Act and Section 1602 of the California Fish and Game Code, as described in greater detail below in the subsequent subsections "*Regional Water Quality Control Board and California Department of Fish and Wildlife.*"

The NWI identified another freshwater pond classified as PUBK in the middle of the eastern edge of the UCR Botanic Gardens. This freshwater pond was not observed during the field survey, as mature trees and an access road were present where the freshwater pond was mapped. The feature that was mapped by the NWI was not observed by Psomas during the time of the site visit; therefore, no jurisdictional resource occurs at this location. A basin in the UCR Botanic Gardens was not identified by the NWI. This basin was artificially created as part of the UCR Flood Control Management Plan for the University Arroyo Watershed (Jones & Stokes 2005) and is a potential jurisdictional resource. A different basin adjacent to undeveloped open space in the southeastern portion of the East Campus is artificial and was not identified by the NWI, although is similar to the basins in the West Campus described above. This other basin is a potential jurisdictional resource.

Two drainage features on the UCR campus were identified by the NWI. The Gage Canal conveys flows through the central portion of the survey area and through both East Campus and West Campus. A second channel flows through the agricultural area south of Martin Luther King Boulevard. This drainage was referred to as the Box Springs Arroyo in the previous LRDP (EIP 2005). The eastern portion was classified as R4SBC, while the western portion was classified as R4SBA (i.e.,

streambeds in the Riverine System with intermittent flow that are either seasonally flooded or temporarily flooded). The field-verified alignment of this drainage varies slightly from the NWI mapping. Both drainages are potential jurisdictional resources.

The main drainage on campus is referred to as the University Arroyo. It traverses Big Springs Road, North Campus Drive, and University Avenue. Portions of this drainage have been channelized and are diverted underground via culverts. The tributary between Pentland Hills and Lothian residence halls is surrounded by riparian and sage scrub habitat that has been planted as part of a restoration effort and is referred to as the Glen Mor Arroyo. The western end of University Arroyo was referred to as Gage Basin. This drainage and its tributaries are potential jurisdictional resources (Psomas 2019).

An arroyo also traverses the northern edge of the UCR Botanic Gardens, along the road leading to the garden, and into the UCR Botanic Gardens basin, which was discussed above. A tributary of the arroyo extends from the hills south of the East Campus. These drainages are potential jurisdictional resources. Additional small drainage features are in the hills in the southeastern corner of the East Campus. Culverts are located at the downstream ends of these features at the I-215/SR 60 freeway. Each of these drainages are potential jurisdictional resources. Figure 4.4-4 shows the locations of potential jurisdictional resources on campus.

U.S. Army Corps of Engineers

Section 404 of the federal Clean Water Act (CWA) regulates activities affecting water resources under the jurisdiction of the United States Army Corps of Engineers (USACE). Waters of the United States (WOUS) under the jurisdiction of the USACE include navigable coastal and inland waters, lakes, rivers, streams, and their tributaries, interstate waters and their tributaries, wetlands adjacent to such waters, intermittent streams, and other waters that could affect interstate commerce.

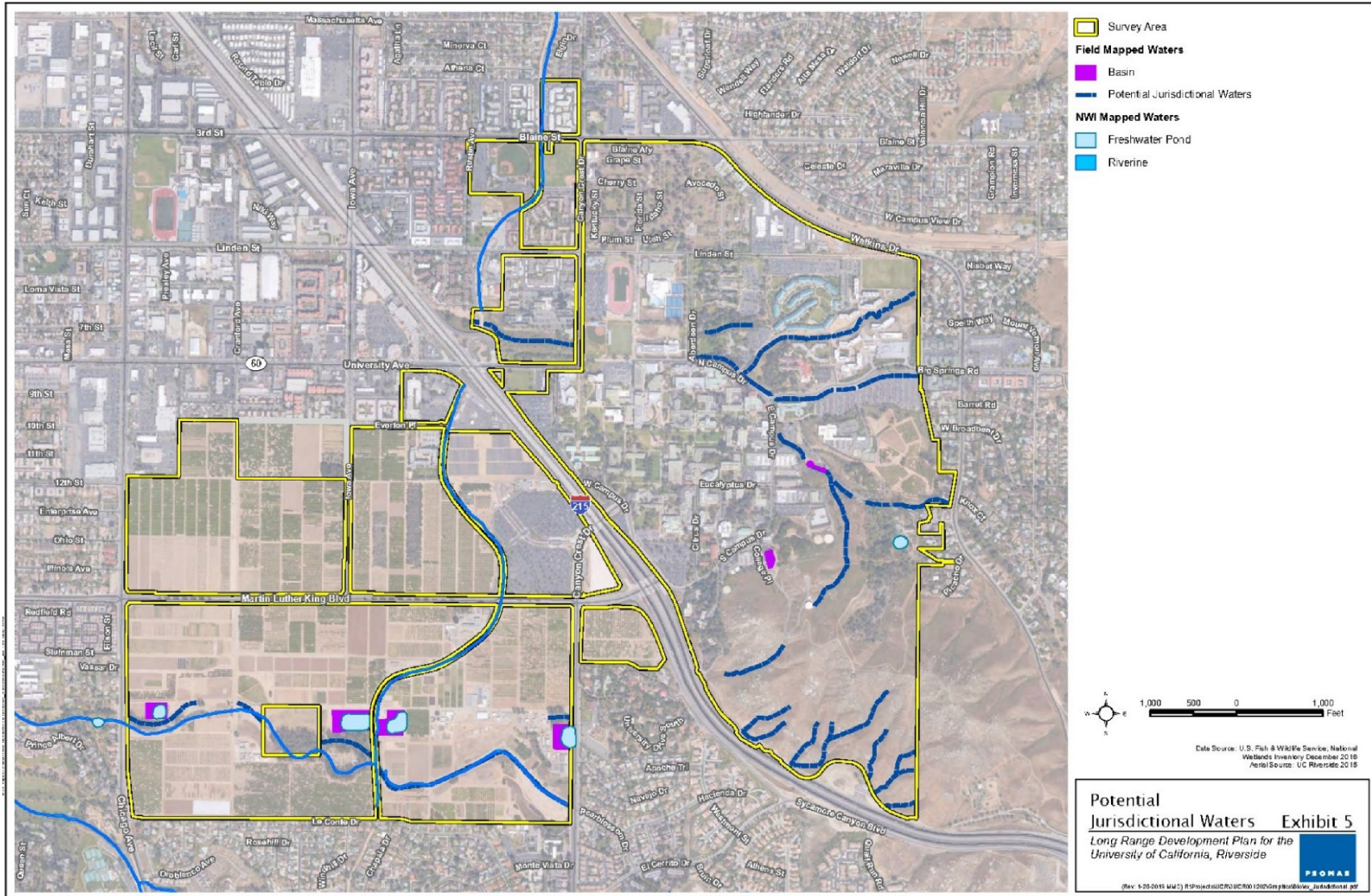
The University Arroyo, including its tributaries and the UCR Botanic Gardens basin, connects with the campus storm drain system, which enters the Gage Basin and then the City of Riverside storm drain system. This ultimately connects to the Santa Ana River, which flows to the Pacific Ocean. With a significant nexus to a traditional navigable water, these areas would likely be considered WOUS.

The drainage features in the hills in the southeastern corner of East Campus go underground at the I-215/SR 60 freeway. If these connect to the City's storm drain system and the Santa Ana River, they may be considered WOUS. Except for the basin in the UCR Botanic Gardens, the on-campus basins are isolated and so would not be considered WOUS (Psomas 2019).

Regional Water Quality Control Board

Section 401 of the CWA provides the Santa Ana Regional Water Quality Control Board (RWQCB) with the authority to regulate, through a Water Quality Certification, any proposed federally-permitted activity that may affect water quality. The RWQCB also has jurisdiction over isolated wetlands and waters under the Porter-Cologne Water Quality Control Act (Porter-Cologne). The RWQCB would take jurisdiction over WOUS, described above. The isolated basins were artificially created within uplands and do not support vegetation; however, the RWQCB may take jurisdiction over them.

Figure 4.4-4 Potential Jurisdictional Waters



Psomas 2019; Appendix D

California Department of Fish and Wildlife

Section 1602 of the *California Fish and Game Code* regulates activities affecting water resources under the jurisdiction of the CDFW. The CDFW has jurisdictional authority over resources associated with rivers, streams, and lakes.

Drainages on the campus have defined bed and banks, with some areas supporting riparian vegetation. The CDFW is expected to take jurisdiction over the on-campus drainages and basins. Although the isolated basins were artificially created within uplands and do not support vegetation, they provide pond habitat for wildlife.

Riparian/Riverine Habitat Assessment

MSHCP Section 6.1.2, Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools, describes the process through which protection of riparian/riverine areas, vernal pools, and fairy shrimp species will occur within the MSHCP Area. Protection of these resources is important for a number of MSHCP conservation objectives. Guidelines for determining whether or not these resources exist on site are described as follows:

- **Riparian/Riverine Areas** are described by the MSHCP as “lands which contain habitat dominated by trees, shrubs, persistent emergent, or emergent mosses and lichens which occur close to or which depend upon soil moisture from a nearby fresh water source or areas with fresh water flow during all or a portion of the year.” Riparian/riverine areas under the MSHCP also include drainage areas that are vegetated or have upland (non-riparian/riverine) vegetation that drain directly into an area that is described for conservation under the MSHCP (or areas already conserved).
- **Vernal Pools** are described by the MSHCP as “seasonal wetlands that occur in depression areas that have wetland indicators of all three parameters (soils, vegetation, and hydrology) during the wetter portion of the growing season but normally lack wetland indicators of hydrology and/or vegetation during the drier portion of the growing season.”
- **Listed Fairy Shrimp Habitat** is described in the MSHCP as habitat for Riverside fairy shrimp (*Streptocephalus woottoni*), vernal pool fairy shrimp (*Branchinecta lynchi*), or Santa Rosa Plateau fairy shrimp (*Linderiella santarosae*), and includes ephemeral pools, artificially created habitat, and/or other features determined appropriate by a qualified biologist.

In addition, Section 6.1.2 of the MSHCP states:

“With the exception of wetlands created for the purpose of providing wetlands habitat or resulting from human actions to create open waters or from the alteration of natural stream courses, areas demonstrating characteristics as described above which are artificially created are not included in these definitions.”

Riparian/riverine habitat and vernal pools within the survey area were identified, mapped, and recorded during the field reconnaissance survey.

Wildlife Corridors and Linkages

Habitat linkages provide links between larger undeveloped habitat areas that are separated by development. Wildlife corridors are similar to linkages but provide specific opportunities for animals to disperse or migrate between areas. A corridor can be defined as a linear landscape feature of

sufficient width to allow animal movement between two comparatively undisturbed habitat fragments. Adequate cover is essential for a corridor to function as a wildlife movement area. It is possible for a habitat corridor to be adequate for one species yet inadequate for others. Wildlife corridors are significant features for dispersal, seasonal migration, breeding, and foraging. Additionally, open space can provide a buffer against both human disturbance and natural fluctuations in resources.

UCR is located at the edge of urban development in the eastern portion of the City. Because of this, there is no regional connection to other open space areas to the north or west. The southeast corner of the campus consists of undeveloped open space linking in the Box Springs Mountains to the northeast with Sycamore Canyon Wilderness Park to the southwest. It should be noted that the MSHCP identifies the hillside areas to the northeast of East Campus as important for wildlife movement. The southern portion of East Campus is in an MSHCP Criteria Area, specifically Criteria Cell 634. Conservation in this cell will contribute to assembly of Proposed Constrained Linkage 7, which is the only connection between existing core habitat in Sycamore Canyon Wilderness Park to the southwest and existing noncontiguous habitat block A in the Box Springs Mountains to the northeast. Conservation in this cell is planned to focus on upland scrub habitat to connect upland scrub habitat proposed for conservation in Criteria Cell 635 to the east with Criteria Cell 719 to the south. Conservation in Criteria Cell 634 will be approximately 5 percent of the cell, focusing on the eastern portion of the Cell.

Although the main campus is developed, University Arroyo, Gage Canal, and the drainage south of Martin Luther King Boulevard provide opportunities for local wildlife movement. Wildlife would also be expected to move through the agricultural portions of the survey area west of the I-215/SR 60 freeway.

4.4.2 Regulatory Setting

Federal

U.S. Army Corps of Engineers

Under Section 404 of the federal CWA, the USACE has authority to regulate activities that could discharge dredge or fill material into wetlands or other WOUS. The definition of WOUS has been the subject of recent litigation, regulatory guidance, and agency rulemaking.

On April 21, 2020, the USACE and United States Environmental Protection Agency published the *Navigable Waters Protection Rule: Definition of "Waters of the United States."* This rule, effective on June 22, 2020, defines four categories of jurisdictional waters, documents certain types of waters that are excluded from jurisdiction, and clarifies some regulatory terms. Under the *Navigable Waters Protection Rule*, WOUS include:

- (1) Territorial seas and traditional navigable waters
- (2) Perennial and intermittent tributaries that contribute surface flow to those waters
- (3) Certain Lakes and ponds, and impoundments of jurisdictional waters
- (4) Wetlands adjacent to jurisdictional waters

Tributaries are defined as "a river, stream, or similar naturally occurring surface water channel that contributes surface water flow to the territorial seas or traditional navigable waters in a typical year either directly or through one or more tributaries, jurisdictional lakes, ponds, and impoundments of

jurisdictional waters, or adjacent wetlands.” The tributary category also includes a ditch that “either relocates a tributary, is constructed in a tributary, or is constructed in an adjacent wetland as long as the ditch is perennial or intermittent and contributes surface water flow to a traditional navigable water or territorial sea in a typical year.”

Adjacent wetlands are defined as wetlands that:

- (i) Abut, meaning to touch at least at one point or side of, a defined WOUS
- (ii) Are inundated by flooding from a defined WOUS in a typical year
- (iii) Are physically separated from a defined WOUS by a natural berm, bank, dune, or similar natural features or by artificial dike, barrier or similar artificial structures as long as direct hydrological surface connection to defined WOUS are allowed
- (iv) Are impounded of WOUS in a typical year through a culvert, flood or tide gate, pump or similar artificial structure

The Navigable Waters Protection Rule states that the following areas not considered to be jurisdictional waters even where they otherwise meet the definitions described above:

- (1) Groundwater, including groundwater drained through subsurface drainage systems
- (2) Ephemeral features that flow only in direct response to precipitation including ephemeral streams, swales, gullies, rills and pools
- (3) Diffuse stormwater runoff and directional sheet flow over uplands
- (4) Ditches that are not defined WOUS and not constructed in adjacent wetlands subject to certain limitations
- (5) Prior converted cropland
- (6) Artificially irrigated areas that would revert to upland if artificial irrigation ceases
- (7) Artificial lakes and ponds that are not jurisdictional impoundments and that are constructed or excavated in upland or non-jurisdictional waters
- (8) Water-filled depressions constructed or excavated in upland or in non-jurisdictional waters for the purpose of obtaining fill, sand, or gravel
- (9) Stormwater control features constructed or excavated in uplands or in non-jurisdictional water to convey, treat, infiltrate, or stormwater runoff
- (10) Groundwater recharge, water reuse, and wastewater recycling structures constructed or excavated in upland or in non-jurisdictional waters
- (11) Waste treatment systems

The USACE also implements the federal policy embodied in Executive Order 11990, which is intended to result in no net loss of wetland value or acres. In achieving the goals of the CWA, the USACE seeks to avoid adverse impacts and offset unavoidable adverse impacts on existing aquatic resources. Any fill or adverse modification of wetlands that are hydrologically connected to jurisdictional waters would require a permit from the USACE prior to the start of work. Typically, when a project involves impacts to WOUS, the goal of no net loss of wetland acres or values is met through compensatory mitigation involving the creation or enhancement of similar habitats.

U.S. Fish and Wildlife Service

The USFWS implements the federal Migratory Bird Treaty Act (MBTA) (16 United States Code Section 703-711) and the Bald and Golden Eagle Protection Act (16 United States Code Section 668). The USFWS and National Marine Fisheries Service (NMFS) share responsibility for implementing the FESA (16 United States Code Section 153 et seq.). The USFWS generally implements the FESA for terrestrial and freshwater species, while the NMFS implements the FESA for marine and anadromous species. Projects that would result in “take” of any federally-listed threatened or endangered species are required to obtain authorization from the USFWS or NMFS through either Section 7 (interagency consultation with a federal nexus) or Section 10 (Habitat Conservation Plan) of FESA, depending on the involvement by the federal government in permitting and/or funding of the project. “Take” under federal definition means to harass, harm (which includes habitat modification), pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The permitting process is used to determine if a project would jeopardize the continued existence of a listed species and what measures would be required to avoid jeopardizing the species. Proposed or candidate species do not have the full protection of FESA; the USFWS and NMFS advise project applicants the species could be elevated to listed status at any time.

Migratory Bird Treaty Act

The federal MBTA of 1918 was originally enacted between the United States and Great Britain (acting on behalf of Canada) for the protection of migratory birds between the two countries. The MBTA has since been expanded to include Mexico, Japan, and Russia. Under MBTA provisions, it is unlawful “by any means or manner to pursue, hunt, take, capture (or) kill” any migratory birds as defined by the MBTA except as permitted by regulations issued by the USFWS. The term “take” is defined by the USFWS regulation to mean to “pursue, hunt, shoot, wound, kill, trap, capture or collect” any migratory bird or any part, nest, or egg of any migratory bird covered by the conventions, or to attempt those activities.

State

California Endangered Species Act

The CESA prohibits the take of any plant or animal listed or proposed for listing as rare (plants only), threatened, or endangered. In accordance with CESA, CDFW has jurisdiction over State-listed species (California Fish and Game Code [CFGFC] Section 2070). The CDFW regulates activities that may result in take of individuals (i.e., hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill). Habitat degradation or modification is not expressly included in the definition of take under the CFGC. The CDFW has interpreted take, however, to include the killing of a member of a species as the proximate result of habitat modification.

California Fish and Game Code

The CDFW derives its authority from the CFGC. CESA (CFGFC Section 2050 et. seq.) prohibits take of State-listed Threatened or Endangered species. Take of fully protected species is prohibited under CFGC Sections 3511, 4700, 5050, and 5515. Section 86 of CFGC defines “take” as hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, capture, or kill. This definition does not include indirect harm by way of habitat modification.

CFGC Sections 3503, 3503.5, and 3511 restrict the take, possession, and destruction of birds, nests, and eggs. Section 3503.5 of the CFGC protects all birds-of-prey and their eggs and nests against

take, possession, or destruction. Fully protected birds may not be taken or possessed except under specific permit (Section 3511).

SSC is a category CDFW uses for those species considered to be indicators of regional habitat changes or considered to be potential future protected species. SSC do not have any special legal status except that which may be afforded by the CFGC, as noted above. CDFW intends the SSC category as a management tool to include these species into special consideration when decisions are made concerning the development of natural lands.

The CDFW also has authority to administer the Native Plant Protection Act (CFGC Section 1900 et seq.). The Native Plant Protection Act requires the CDFW to establish criteria for determining if a species, subspecies, or variety of native plant is endangered or rare. Under Section 1913(c) of the Native Plant Protection Act, the owner of land where a rare or endangered native plant grows is required to notify the department at least 10 days in advance of changing the land use to allow for salvage of plant(s).

Perennial, intermittent, and ephemeral streams and associated riparian vegetation, when present, also fall under the jurisdiction of the CDFW. Section 1600 et seq. of the CFGC (Lake and Streambed Alteration Agreements) gives CDFW regulatory authority over work in the bed, bank, and channel (which could extend to the 100-year floodplain), consisting of, but not limited to, the diversion or obstruction of the natural flow or changes in the channel, bed, or bank of any river, stream or lake.

California Fish and Game Code Section 1602 – Streambed Alteration

All diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake in California that supports fish or wildlife resources are subject to regulation by CDFW under Section 1602 of the California Fish and Game Code. Under Section 1602, it is unlawful for any person, governmental agency, or public utility to do any of the following within first notifying CDFW:

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

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

Porter-Cologne Water Quality Act

The State Water Resources Control Board (SWRCB) works in coordination with nine RWQCBs to preserve, protect, enhance, and restore water quality throughout the State. Each RWQCB makes decisions related to water quality for its region, and may approve, with or without conditions, or deny projects that could affect waters of the State. Their authority to regulate activities that could result in a discharge of dredged or fill material comes from the CWA and Porter-Cologne.

Porter-Cologne broadly defines WOUS as “any surface water or groundwater, including saline waters, within the boundaries of the State.” Because Porter-Cologne applies to any water, whereas the CWA applies only to certain waters, California’s jurisdictional reach overlaps and may exceed the boundaries of WOUS. For example, Water Quality Order No. 2004-0004-DWQ states that “shallow” waters of the State include headwaters, wetlands, and riparian areas. In practice, the RWQCBs may claim jurisdiction over riparian areas. Where riparian habitat is not present, such as may be the case at headwaters and urbanized areas, jurisdiction is taken to the top of bank.

The SWRCB adopted a State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to waters of the State, for inclusion in the forthcoming Water Quality Control Plan for Inland Surface Waters and Enclosed Bays and Estuaries and Ocean Waters of California. The Procedures consist of four major elements: a wetland definition; a framework for determining if a feature that meets the wetland definition is a water of the State; wetland delineation procedures; and procedures for the submittal, review and approval of applications for Water Quality Certifications and Waste Discharge Requirements for dredge or fill activities (SWRCB 2021).

Pursuant to Section 401 of the CWA, projects regulated by the USACE must obtain a Water Quality Certification from the RWQCB. This certification ensures the proposed project will uphold State water quality standards. Because California’s jurisdiction to regulate its water resources is much broader than that of the federal government, proposed impacts on waters of the State require Water Quality Certification even if the area occurs outside of USACE jurisdiction.

The SWRCB and the local Santa Ana RWQCB have jurisdiction over waters of the State, with federal authority under the CWA Section 401 and State authority under Porter-Cologne to protect water quality, which prohibits discharges to such waters. WOUS are defined as any surface water or groundwater, including saline waters, in the boundaries of the State.

University of California, Riverside

The LRDP is a general guide that discusses future land use patterns and development of facilities, circulation, open space and infrastructure. To assist in implementation of the LRDP, UCR includes more detailed planning documents, such as the Physical Design Framework and Campus Construction and Design Standards⁴ which are considered during the Design Review process. These documents will be kept current with the implementation of the proposed 2021 LRDP. More specifically, as described in the Physical Design Framework, UCR requires all new buildings to include planting that is native, drought-tolerant, low-maintenance, and adapted to xeric conditions. Furthermore, the Tree Preservation and Replacement Guidelines provide the metrics for reestablishing the green canopy lost to new construction.

Regional and Local (Binding)

Western Riverside County Multiple Species Habitat Conservation Plan

The Western Riverside County MSHCP is a comprehensive, multi-jurisdictional habitat conservation plan that focuses on conservation of species and their associated habitats in western Riverside County. The MSHCP Plan Area encompasses approximately 1.26 million acres (1,966 square miles); it includes all unincorporated Riverside County land west of the crest of the San Jacinto Mountains to the Orange County line, and the jurisdictional areas of Temecula, Murrieta, Lake Elsinore, Canyon Lake, Norco, Corona, Riverside, Moreno Valley, Banning, Beaumont, Calimesa, Perris, Hemet,

⁴ The Campus Construction and Design Standards is a living document that replaces the 2007 *Campus Design Guidelines*.

Eastvale, Jurupa Valley, Wildomar, Menifee, and San Jacinto. The MSHCP is designed to protect more than 150 species and conserve 500,000 acres of land.

The MSHCP serves as a habitat conservation plan pursuant to Section 10(a)(1)(B) of FESA, as well as a natural communities conservation plan under the Natural Communities Conservation Plan Act of 2001. The MSHCP is used to allow the participating jurisdictions to authorize take of plant and wildlife species identified in the MSHCP Plan Area under specific conditions/measures. Under the MSHCP, USFWS and CDFW will grant “take authorization” for otherwise lawful actions in exchange for the assembly and management of a coordinated MSHCP conservation area.

Regional and Local (Non-Binding)

As noted in Section 4, “University of California Autonomy,” UCR, a constitutionally created State entity, is not subject to municipal regulations of surrounding local governments for uses on property owned or controlled by UCR that are in furtherance of the university’s educational purposes. However, UCR may consider, for coordination purposes, aspects of local plans and policies of the communities surrounding the campus when it is appropriate and feasible, but not bound by those plans and policies in its planning efforts. Those plans and policies are discussed below.

Stephens’ Kangaroo Rat HCP

In response to the federal listing of Stephens’ kangaroo rat, the Riverside County Habitat Conservation Agency (RCHCA) was formed. Its purpose is to acquire and manage habitat for the Stephens’ kangaroo rat and other associated special-status species. The RCHCA Stephens’ Kangaroo Rat Habitat Conservation Plan (HCP) was developed to meet the requirements of the program’s federal Endangered Species Act (FESA) Section 10(a) permit. The HCP for this species is managed by the RCHCA. The HCP establishes a Reserve System where activities in the core reserve areas are limited or restricted. UCR does not fall in one of the designated RCHCA reserve areas (RCHCA 2018).

City of Riverside General Plan

The City’s General Plan Open Space and Conservation element seek to preserve existing natural resources in the City, including hillsides, arroyos and other open space areas that support wildlife species and plant communities (City of Riverside 2012). General Plan policies focus on protecting the Santa Ana River, Sycamore Canyon, the arroyos, riparian/riverine areas, vernal pools, and other important watershed areas from urban encroachment, urban pollutants, and erosion, and to protect existing open space linkages consistent with the MSHCP. Policies also address MSHCP survey and protection requirements for species such as the burrowing owl and Stephens’ kangaroo rat.

4.4.3 Environmental Impacts and Mitigation Measures

Significance Criteria

UCR utilizes the following 2020 CEQA Guidelines Appendix G significance criteria questions related to biological resources.

Would the proposed 2021 LRDP:

- a) 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 the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

- b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?
- c) Have a substantial adverse effect on State or federally-protected wetlands (including, but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?
- d) 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?
- e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?
- f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

Issues Not Evaluated Further

Local Policies or Ordinances Protecting Biological Resources (Criterion e)

The Initial Study for the proposed 2021 LRDP (Appendix A) concluded that UCR does not fall in one of the designated RCHCA reserve areas and that potential impacts would be less than significant. Issues related to local policies or ordinances protecting biological resources are not evaluated further.

Conflict with an Adopted Habitat Conservation Plan (Criterion f)

The Initial Study for the proposed 2021 LRDP (Appendix A) noted that UCR is not a permittee to the Western Riverside County MSHCP and therefore is not subject to the conservation efforts established in the plan. However, UCR is still subject to compliance with Sections 6.1.2 (Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools), Section 6.1.3 (Protection of Narrow Endemic Plant Species), Section 6.3.2 (Additional Survey Needs and Procedures), and Section 6.1.4 (Guidelines Pertaining to the Urban/Wildlands Interface) of the MSHCP when specific campus projects are proposed. Given that, the Initial Study (Appendix A) concluded that impacts are considered less than significant, this issue is not discussed further in the analysis below.

Analysis Methodology

The analysis of biological resource impacts is based on information and data contained in the Biological Resources Constraints Report conducted for the proposed 2021 LRDP (Psomas 2019; Appendix D) and previous environmental documentation prepared for projects located in the City of Riverside and the UCR campus.

2021 LRDP Objectives and Policies

The proposed 2021 LRDP contains objectives and policies relevant to biological resources:

Open Space (OS)

- Objective OS5: Demonstrate an increased commitment to preservation and enhancement of the natural environment through the design and placement of future campus landscapes.

- Policy: Consider the ecological and potential stormwater management functions of proposed landscapes. Utilize climate-appropriate, native/drought-tolerant, and/or low maintenance landscape materials outside of signature campus open spaces.
- Policy: Protect the steep and natural hillsides on the southeast campus designated as an Open Space Reserve, to protect cultural resources, wildlife habitat, and provide a visual backdrop to the campus, and protect against erosion.
- Policy: In Open Space Reserve areas where arroyos and other natural features exist, preserve wherever feasible existing landforms, native plant materials, and trees. Where appropriate, restore habitat values.

Campus Utility Infrastructure – Stormwater (SW)

- Objective SW1: Transition the campus lands to manage stormwater in a manner that replicates natural drainage patterns and allow plants to filter pollutants out of runoff and promote infiltration over flowing into waterways, thus meeting regulatory requirements through innovative, attractive, and cost-efficient solutions.
 - Policy: Prepare and maintain a Storm Water Management Plan to account for the additional runoff from the projected new development to meet the requirements of the State of California’s mandated Phase II Small Municipal Separate Storm Sewer System (MS4) Section F.5.g. (Post-Construction Storm Water Management Plan), including Section F.5.g.3. (Alternative Post-Construction Storm Water Management Plan) consistent with the Maximum Extent Practicable standard.
 - Policy: To the extent feasible, integrate stormwater infrastructure within the open space framework of campus such that developable campus lands are minimally lost. The Storm Water Management Plan will include planning and design strategies to restore, enhance, and maintain hydrological function on campus and within the regional hydrological system in response to the projected development.

As part of the LRDP process, UCR is also drafting the Tree Preservation and Replacement Guidelines which would be applicable to new development under the 2021 LRDP. This document notes consideration should be made for the timing of tree removal and replanting activities and follow the MBTA to avoid disturbing migratory birds and their nests. Additionally, this document will include the following tree replacement requirements:

- For standard trees that are not identified as mature specimen trees, memorial trees, landmark trees, or historic trees as defined in the Tree Preservation and Replacement Guidelines, removal of standard trees shall be replaced at a minimum 1:1 ratio.
- For “trees of value” which would include mature specimen trees, memorial trees, landmark trees, or historic trees, removal of “trees of value” shall be replaced based on the diameter or breast height and canopy requirements noted in the Tree Preservation and Replacement Guidelines.

Impact Analysis

Impact BIO-1 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 THE CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE OR U.S. FISH AND WILDLIFE SERVICE.

IMPLEMENTATION OF THE PROPOSED 2021 LRDP WOULD RESULT IN DIRECT OR INDIRECT IMPACTS TO SPECIAL-STATUS SPECIES. MITIGATION MEASURES MM BIO-1A THROUGH MM BIO-8, INCLUDING PRECONSTRUCTION SURVEYS, AVOIDANCE MEASURES, AND PROJECT DESIGN STANDARDS, WOULD REDUCE IMPACTS TO LESS THAN SIGNIFICANT.

As shown in Draft EIR Figure 2-1, development under the proposed 2021 LRDP would occur primarily within previously disturbed areas, or adjacent to previously developed areas, surface parking areas, generally along North/South/East/West Campus Drive, and generally along University Avenue, Canyon Crest Drive, Big Springs Road, Aberdeen Drive, and West Linden Street. These new developments would primarily occur in the Academics & Research, University Avenue Gateway, Canyon Crest Gateway, Recreation & Athletics, and Student Neighborhood land use designations. Most development under the 2021 LRDP would primarily be infill development or expansion of already developed areas. Most areas in the undeveloped southeast portion of Campus are designated Open Space Reserve and UCR Botanic Gardens, consistent with existing uses. The proposed 2021 LRDP objectives and policies noted above and the Open Space Reserve LRDP land use designation within the southern and eastern portions of East Campus help preserve and enhance the natural environment.

The undeveloped areas of West Campus are primarily designated Land-based Research, consistent with existing uses. Two northern parcels of West Campus are being designated Agricultural/Campus Research. These northwestern parcels are proposed to be developed with new structures which include interdisciplinary research, education, and support for land-based research activities (e.g., agricultural research). For additional information on these land use designations please see Section 2 of the 2021 LRDP.

The MSHCP requires UCR development to conduct focused surveys for Riverside fairy shrimp and least Bell's vireo, whether UCR elects to be a PSE or not. If these species are present, and UCR elects to act as a PSE, take could be obtained through preparation of a Determination of Biologically Equivalent or Superior Preservation. If a future project under the proposed 2021 LRDP would affect habitat occupied by Riverside fairy shrimp, least Bell's vireo, coastal California gnatcatcher, or Stephens' kangaroo rat, using the MSHCP for take authorization may be beneficial. The MSHCP does not require focused surveys for western spadefoot or Swainson's hawk, and the campus is not within an MSHCP-designated Los Angeles pocket mouse survey area. These three species were therefore excluded from this and Psomas' analysis.

If UCR chooses not to act as a PSE, then the project would be processed under Section 7 or 10 of the FESA. If acting as a PSE, no surveys would be required for coastal California gnatcatcher or Stephens' kangaroo rat, even though they have potential to occur. All other MSHCP requirements would also need to be followed for the project. If not acting as a PSE, and potentially suitable habitat would be affected, focused surveys would be required for coastal California gnatcatcher. If the species is observed, then the project would be processed under Section 7 or 10 of the FESA. The benefit of using the MSHCP would depend on the types of habitat being affected and whether take authorization would be needed; this would be determined on a project-by-project basis.

Criteria Cell 634 is within the proposed 2021 LRDP Open Space Reserve land use designation. The Open Space Reserve land use designation would recognize, protect, and enhance areas that have ecological or aesthetic value to campus, including those subject to special development constraints due to native or endangered species habitats, steep or unique terrain such as arroyos and riparian corridors, or other natural features. The predominant Open Space Reserve uses may include designated hillsides, stormwater management infrastructure, habitat restoration and management activities, trails and minor amenities such as seating and viewing areas, and other features compatible with natural open spaces. For additional information on these land use designations please see Section 2 of the 2021 LRDP.

Since the UCR campus boundary only extends over the western half of Criteria Cell 634, future development of this area as part of the 2021 LRDP would not conflict with the conservation goals for Criteria Cell 634. The portion of the campus that overlaps Criteria Cell 634 is in an additional survey needs area for Criteria Area plant species (i.e., Nevin's barberry, smooth tarplant, and round-leaved filaree [*California macrophylla*]).⁵ As discussed above, there is a low potential for habitat for Nevin's barberry, and smooth tarplant is present in the survey area. Although unlikely and not reasonably foreseeable, if a project is planned in this area, focused surveys would be required for these species whether UCR acted as a PSE.

Stephens' Kangaroo Rat

Marginally suitable habitat for Stephens' kangaroo rat occurs in the annual grassland in Natural Areas on campus (see Figure 4.4-2). UCR does not fall within one of the designated RCHCA reserve areas for the Stephens' kangaroo rat, and although portions of East Campus are within a designated Fee Area, focused surveys for the Stephens' kangaroo rat are not required, and development of any parcel used by local, State, or federal entities for governmental purposes (i.e., public works, schools) are not required to pay the mitigation fee unless such development voluntarily participates in order to mitigate the disturbance of occupied Stephens' kangaroo rat habitat per Section 10 Exemptions of Riverside County Ordinance No. 663.10 (County of Riverside 1996). Furthermore, under the proposed 2021 LRDP, most of the natural area annual grasslands will be designated as Open Space Reserve. Potential development in marginally suitable Stephens' kangaroo rat habitat is not considered significant. Impacts would be **less than significant**.

Burrowing Owl

The MSHCP identifies areas of the UCR campus as being located within the designated survey area for burrowing owl, requiring a burrowing owl suitability assessment to be conducted. Major areas include the southeastern portion of East Campus (mainly in lands designated Open Space Reserve) and scattered areas of West Campus, as shown in Figure 4.4-3. While no development is reasonably foreseeable in these areas, if a project were planned in an area with suitable burrowing owl habitat, preconstruction survey and focused surveys (if necessary) would be required. If burrowing owls were present during project construction, there would be the potential to impact the species directly or indirectly from noise or vibration. Furthermore, the northern parcels on West Campus which are designated Agricultural/Campus Research are proposed for development, which would overlap with a small area identified in Figure 4.4-3 as potentially containing habitat for the burrowing owl. Therefore, impacts to the burrowing owl would be significant without mitigation. However, implementation of Mitigation Measures **MM BIO-1A** and **MM BIO-1B** would reduce

⁵ While the MSHCP considers this a Criteria Area plant species, its status has recently changed, and it does not currently have a CRPR.

potential impacts to **less than significant with mitigation incorporated** by requiring a preconstruction survey, and if present, avoidance measures.

Nesting Birds and Raptors

Nesting birds and raptors have the potential to nest on buildings, in culverts, in shrubs and trees, in rocky outcrops, and on bare ground throughout the survey area. The nests of most native birds and raptors are federally- and State-protected. Vegetation within and surrounding the campus has the potential to provide refuge cover from predators, perching sites and favorable conditions for avian nesting that could be affected by projects developed under the proposed 2021 LRDP.

Potential impacts to nesting birds, including common passerine species protected under the MBTA and CFGC, could occur if nests are located on a project site and/or in the immediate vicinity during construction activities. Direct impacts from construction activities may include ground disturbance and removal of trees, which could contain bird nests. Indirect impacts include construction noise, lighting, and fugitive dust. These impacts could lead to individual mortality or harassment that might reduce nesting success.

Additionally, a potential long-term, operational impact of future development concerns bird strike mortality and injury. Ornithologists estimate that up to a billion birds are killed or injured annually by collisions with clear and reflective sheet glass and plastic. It is thought that birds cannot distinguish between the reflection on the glass/plastic surface and the natural landscape. Construction of glass-fronted buildings or other structures using exposed glass (e.g., glass-topped walls) has the potential to result in bird strikes, especially if the structures are located adjacent to natural areas. The use of ultraviolet patterns in the glass are not detectable to humans but can substantially reduce bird strikes (Psomas 2019).

Therefore, impacts to nesting birds and raptors would be considered significant without mitigation. However, implementation of Mitigation Measures **MM BIO-2 and MM BIO-3** would reduce potential impacts to **less than significant** by providing for nesting bird avoidance and bird strike avoidance.

Bats

Several bat species, including the special-status western yellow bat (*Lasiurus xanthinus*) and pallid bat (*Antrozous pallidus*), may forage and roost in areas in the UCR campus, such as in buildings, culverts, mature trees, and rock outcrops. Impacts on a small amount of foraging habitat would not decrease the regional population below self-sustaining levels. Therefore, impacts on foraging habitat would be less than significant. However, construction activities may impact roost structures and mature vegetation during construction of projects developed under the proposed 2021 LRDP. Bats can roost under broad leaves, under exfoliating bark/tree holes, crevices, eaves, attics, Spanish roof tiles, and can fit in any gaps the size of a quarter. They prefer materials that provide some thermo regulation like thick wood or concrete, and there are usually signs of bats with staining and guano that would indicate their presence. Maternity roosts are of most concern; therefore, impacts to special-status bat species would be considered significant without mitigation. However, implementation of Mitigation Measure **MM BIO-4** would reduce potential impacts to **less than significant with mitigation incorporated** by requiring preconstruction bat surveys.

Indirect Impacts

The proposed 2021 LRDP objectives and policies noted above and the Open Space Reserve LRDP land use designation within the southeastern portions of East Campus help preserve and enhance the natural environment.

The MSHCP provides guidelines pertaining to the urban/wildlands interface. These indirect effects (i.e., “edge effects”) are associated with locating development in proximity to the MSHCP conservation area. These impacts affect the quality of nearby wildlife habitat resulting from disturbance by construction and/or the long-term use of the site, as described below.

WATER QUALITY

In general, discharges or runoff from project operation may carry pollutants, while runoff from construction may carry excessive silt, petroleum, or other chemical contaminants. Such runoff can affect water quality which in turn can affect habitat quality and the species using the waters. However, as discussed in Section 4.10, *Hydrology and Water Quality*, Best Management Practices (BMPs) would be used to avoid and minimize indirect impacts on water quality during construction and operation of projects developed under the 2021 LRDP.

All construction projects would be required to comply with various regulatory requirements related to storm water runoff during construction and operation to minimize the potential for pollutants to enter receiving waters. All UCR facility design and construction projects must comply with applicable State building code requirements, as well as State and federal agency regulations. All campus projects would be required to comply with the provisions of the Statewide General Construction Activity Stormwater Permit that specifies the implementation of BMPs, which may include, but is not limited to:

- Proper storage, use, and disposal of construction materials
- Watering exposed soils
- Installing sandbags to minimize off-site runoff
- Creating temporary desilting basins
- Construction vehicle maintenance in staging areas to avoid leaks or spills of fuels, motor oil, coolant, and other hazardous materials
- Installation of silt fences and erosion control blankets
- Time grading activities to avoid the rainy season (November through April)
- Stabilization of cleared or graded slopes
- Protection or stabilization of stockpiled soils
- Continual inspection and maintenance of all specified BMPs through the duration of construction

Furthermore, UCR has been and will continue to implement the National Pollutant Discharge Elimination System (NPDES) Phase II requirements through the implementation of a Stormwater Management Program that includes construction site stormwater runoff control for sites greater than 1 acre and post-construction stormwater management in new development and redevelopment. General Construction Storm Water Permit requirements also require inspection, monitoring, and reporting. Corrective action within 72 hours is also required for any issue of non-compliance identified during monitoring and inspections.

Storm drain infrastructure for future campus projects developed under the proposed 2021 LRDP would adhere to UCR requirements under the NPDES Program, including a post-construction site stormwater runoff control program for new development and redevelopment. The proposed 2021 LRDP would direct UCR to create a Storm Water Management Plan to account for the additional runoff from the projected new development to meet the requirements of the Phase II Small MS4 permit, Section F.5.g. (Post-Construction Storm Water Management Plan), including Section F.5.g.3. (Alternative Post-Construction Storm Water Management Plan) consistent with the Maximum Extent Practicable standard.

Under the Storm Water Management Plan, facilities would incorporate Site Design, Source Control, and Treatment BMPs to prevent pollutants from reaching receiving waters. Specific details related to these regional stormwater BMPs would be developed during required project-level design evaluations. Construction and operation of the proposed 2021 LRDP would occur pursuant to applicable water quality standards and waste discharge requirements and would not substantially degrade surface or groundwater quality. Impacts to wildlife habitat from polluted storm water would be **less than significant**.

NOISE

As discussed in Section 4.11, *Noise*, development under the 2021 LRDP would use construction equipment ranging up to 85 dBA at 50 feet, as shown in in Table 4.11-8. Future projects and their construction could increase the noise in adjacent habitat areas. During operation, additional human activity and noise from vehicles and other machinery (generators) would increase the noise level in adjacent habitat. During construction, equipment noise would temporarily increase noise levels in adjacent areas. Increased noise could discourage use by wildlife that are not urban-tolerant and/or has the potential to disrupt foraging, nesting, roosting, and/or denning activities for a variety of wildlife species. This impact would be minimal for construction located in central locations of the campus where ambient noise presently exists, and wildlife is expected to be urban-tolerant.

However, noise could adversely affect wildlife if construction is located adjacent the southeastern portion of East Campus next to areas planned for conservation by the MSHCP (i.e., Criteria Cell 634) and noise impacts would be potential significant. Most development under the 2021 LRDP would primarily be infill development and occur in the Academic Center or northern area of East Campus, away from the MSHCP Criteria Area. A new interpretive center is programmatically assumed in the UCR Botanic Gardens designation on East Campus, but no foreseeable facility development is anticipated in the Open Space Reserve in East Campus. Additionally, it is reasonable to assume no development would occur in Criteria Cell 634. For future development along South Campus Drive and East Campus Drive where development is adjacent to the Open Space Reserve/southeast hills, implementation of Mitigation Measure **MM BIO-2** would reduce construction noise impacts to nesting birds and, in the event of development near Criteria Cell 634, **MM BIO-8** would reduce construction noise impacts to wildlife in MSHCP conservation areas to a level considered **less than significant with mitigation incorporated**.

DUST

In general, grading activities can disturb soils and result in the accumulation of dust on the surface of the leaves of trees, shrubs, and herbs in adjacent open space areas. Such dust can affect the respiratory function of the plants when dust accumulation is excessive. However, as discussed in Section 4.2, *Air Quality*, development under the LRDP would have to comply with SCAQMD District Rule 403 which requires dust suppression measures including watering, application of

environmentally safe soil stabilization materials, and/or roll compaction to prevent the creation of dust. Therefore, impacts from dust would be **less than significant**.

NIGHT LIGHTING

The campus is currently characterized by a moderate to high level of nighttime illumination, depending on location, that allows for safe and secure nighttime operation of campus facilities and events and on-campus residential life. Depending upon location, night lighting of new facilities, roads, or pathways or during project construction could result in an indirect impact on the behavioral patterns of nocturnal and crepuscular (i.e., active at dawn and dusk) wildlife adjacent to the lighted areas. Of greatest concern is the effect on small ground-dwelling animals that use the darkness to hide from predators (e.g., owls), which are specialized night foragers.

New structures developed under the 2021 LRDP would comply with the Campus Construction and Design Standards which state that “Lighting should focus on providing an even, consistent coverage, softening contrast ratios at edges and thus improving visibility by avoiding excess illumination and brightness...Light illuminating from fixtures should be cast downward with full cut-off shades.” Additional night lighting in areas that are currently developed is not expected to adversely impact wildlife species. However, new lighting in areas adjacent to undeveloped open space, particularly in the southern area of East Campus next to areas planned for conservation by the MSHCP, could adversely affect wildlife. Impacts to wildlife habitat from night lighting would be considered significant without mitigation. However, implementation of Mitigation Measures **MM BIO-6A and MM BIO-6B** would reduce potential impacts to **less than significant with mitigation incorporated**. These measures include light avoidance during construction and operation in areas within or adjacent to the Open Space Reserve designation in the LRDP.

HUMAN ACTIVITY

Depending upon location, an increase in human activity may impact wildlife species in adjacent open space as a result of unauthorized public access, illegal dumping, and domestic animal predation. Human disturbance can disrupt normal foraging and breeding behavior of wildlife remaining in the area adjacent to the development, diminishing the value of the habitat. Wildlife stressed by human activity may be extirpated from the natural open space adjacent to development, leaving only wildlife tolerant of human activity. Given the high level of human activity presently on campus under baseline conditions, this impact is not expected to adversely affect wildlife species except when new facilities, roads, or pathways are located adjacent to undeveloped open space, particularly in the southeast portion of UCR campus next to areas planned for conservation by the MSHCP. A substantial increase in human activity near MSHCP Proposed Constrained Linkage 7 has the potential to prevent wildlife from moving between habitat in Sycamore Canyon Wilderness Park and the Box Springs Mountains.

As currently envisioned, development under the proposed 2021 LRDP would occur primarily within previously disturbed areas, adjacent to previously developed areas, surface parking areas, generally along North/South/East/West Campus Drive, and generally along University Avenue, Canyon Crest Drive, Big Springs Road, Aberdeen Drive, and West Linden Street. These new developments would occur in the Academics & Research, University Avenue Gateway, Canyon Crest Gateway, Recreation & Athletics, and Student Neighborhood land use designations. The designated Open Space Reserve is the land use located in the MSHCP Criteria Cell 634. While there may be temporary or small development in Open Space Reserve areas, this area would mainly be used for conservation of natural lands. There are currently no planned or foreseeable development within the Open Space

Reserve areas. Therefore, human activity is not anticipated to impact wildlife species and would be **less than significant**.

Implementation of the proposed 2021 LRDP objectives and policies to limit development in lands designated as Open Space Reserve and incorporation of Mitigation Measures **MM BIO-1A through MM BIO-8** would further reduce potential impacts on candidate, sensitive, or special-status species.

Mitigation Measures

The following mitigation measures would be required to address potential impacts to special-status species and habitat.

MM BIO-1A Burrowing Owl Preconstruction Survey

Prior to construction activities, preconstruction presence/absence surveys for burrowing owls shall be conducted in the project survey area where suitable habitat is present prior to ground disturbance in new areas. Preconstruction surveys shall be conducted by a qualified biologist no more than 30 days prior to grading or other significant site disturbance. Surveys shall include the development footprint and consider up to a 500-foot buffer of adjacent areas to the extent feasible (e.g. a visual survey of adjacent areas will suffice for off-site areas not accessible). The surveys shall be conducted in accordance with the MSHCP burrowing owl survey guidelines. A burrow shall be considered occupied when there is confirmed use by burrowing owls based on observations made by a qualified biologist. If owls are not found to be occupying habitat in the survey area during the preconstruction survey, the proposed disturbance activities may proceed. Take of active nests shall be avoided.

MM BIO-1B Burrowing Owl Avoidance Measures

If owls are discovered on and/or within 500 feet of the proposed project site, avoidance measures shall be developed by the qualified biologist in compliance with the MSHCP and in coordination with the CDFW and/or RCA. Such measures will include but not be limited to the following:

- Burrowing owls shall not be disturbed on-site and/or within a 500-foot buffer or as determined by a biologist between February 1 and August 31 to avoid impacting nesting.
- Prior to any ground disturbance, all limits of project construction shall be delineated and marked to be clearly visible to personnel on foot and in heavy equipment. All construction-related activities shall occur inside the limits of construction and designated staging areas. Construction staging and equipment storage shall be situated outside of any occupied burrowing owl burrow locations. All construction-related movement shall be restricted to the limits of construction and staging areas.
- Avoidance measures shall include passive relocation by a qualified biologist to remove the owls between September 1 and January 31, which is outside of the typical nesting season.

MM BIO-2 Nesting Bird Avoidance

Prior to issuance of grading permits, the following measures shall be implemented:

- To avoid disturbance of nesting and special-status bird species protected by the MBTA and California Fish and Game Code, activities related to the project, including but not limited to, vegetation removal, ground disturbance, and construction and demolition shall occur outside of the bird breeding season (February 15 through August 31). If construction must be initiated during the peak nesting season, vegetation removal and/or tree removal should be planned to

occur outside the nesting season (September 1 to February 14) and a preconstruction nesting bird survey shall be conducted no more than 3 days prior to initiation of construction activities. The nesting bird preconstruction survey shall be conducted on foot inside the project site disturbance areas. If an active avian nest is discovered during the preconstruction clearance survey, construction activities shall stay outside of a 50- to 200-foot buffer for common nesting birds around the active nest, as determined by a biologist. For listed and raptor species, this buffer shall be expanded to 500 feet or as determined by a biologist.

- Inaccessible areas shall be surveyed from afar using binoculars to the extent practical. The survey shall be conducted by a qualified biologist familiar with the identification of avian species known to occur in western Riverside County. If nests are found, an appropriate avoidance buffer shall be determined by a qualified biologist and demarcated by a qualified biologist with bright orange construction fencing, flagging, construction lathe, or other means to mark the boundary. Effective buffer distances are highly variable and based on specific project stage, bird species, stage of nesting cycle, work type, and the tolerance of a particular bird pair. The buffer may be up to 500 feet in diameter, depending on the species of nesting bird found and the biologist's observations.
- If nesting birds are located adjacent to the project site with the potential to be affected by construction activity noise above 60 dBA Leq (see Section 4.11, *Noise*, for definitions and discussion of noise levels), a temporary noise barrier shall be erected consisting of large panels designed specifically to be deployed on construction sites for reducing noise levels at sensitive receptors. If 60 dBA Leq is exceeded, an acoustician would require the construction contractor to make operational and barrier changes to reduce noise levels to 60 dBA during the breeding season (February 15 through August 31). Noise monitoring shall occur during operational changes and installation of barriers to ensure their effectiveness. All construction personnel shall be notified as to the existence of the buffer zone and to avoid entering the buffer zone during the nesting season. No parking, storage of materials, or construction activities shall occur within this buffer until the avian biologist has confirmed that breeding/nesting is completed, and the young have fledged the nest. Encroachment into the buffer shall occur only at the discretion of the qualified biologist, if it is determined such encroachment will not adversely impact the nesting birds.

MM BIO-3 Bird Strike Avoidance

To reduce bird strike mortality and injury of special-status bird species from collisions with clear and reflective sheet glass and plastic, construction of glass-fronted buildings or other structures using exposed glass (e.g., glass-topped walls) shall incorporate measures to minimize the risk of bird strikes. This may include: (1) the use of opaque or uniformly textured/patterned/etched glass, (2) angling of glass downward so that the ground instead of the surrounding habitat or sky is reflected, (3) installation of one-way film that results in opaque or translucent covering when viewed from either side of the glass, (4) installation of a uniformly dense dot pattern created as ceramic frit on both sides of the glass, and/or (5) installation of a striped or grid pattern of clear ultraviolet-reflecting and ultraviolet-absorbing film applied to both sides of the glass. It should be noted that single decals (e.g., falcon silhouettes or large eye patterns) are ineffective and are not recommended unless the entire glass surface is uniformly covered with the objects or patterns.

MM BIO-4 Bat Preconstruction Survey

To avoid disturbance of special-status bat species during maternity season (approximately March-September), a preconstruction roosting bat survey shall be conducted by a qualified bat biologist on

potential roost structures identified by the bat biologist and mature vegetation no more than 30 days prior to initiation of construction activities if construction activities must occur during the roosting season. If future projects would impact rocky outcrops, mature vegetation, existing buildings, or other structures that could be used for roosting, a passive acoustic survey shall identify the species using the area for day/night roosting. If special-status roosting bats are present and their roosts would be impacted, a qualified bat biologist should prepare a plan to identify the proper exclusionary methods. Removal of mature trees should be monitored by a qualified bat biologist and occur by pushing down the entire tree (without trimming or limb removal) using heavy equipment and leaving the felled tree on the ground untrimmed and undisturbed for a period of at least 24 hours. To exclude bats from buildings/structures or rocky outcrops, exclusion measures should be installed on crevices by placing one-way exclusionary devices that allow bats to exit but not enter the crevice.

MM BIO-5 Special-Status Species Preconstruction Survey

Focused surveys for special-status plants and wildlife species with potential to occur in or around the project site shall be conducted prior to impacts on areas of suitable habitat for each respective species, including special-status plant species, Riverside fairy shrimp, burrowing owl, coastal California gnatcatcher, and least Bell's vireo. Surveys shall be performed by a qualified biologist with the appropriate federal/State permits, if necessary, and follow approved survey protocol, which includes appropriate timing of surveys. If listed species are observed and habitat areas cannot be avoided, then consultation/permitting would be required to obtain take authorization. Appropriate avoidance, minimization, and compensatory mitigation shall be required for each listed species that could be impacted.

MM BIO-6A Sensitive Communities Indirect Impact Avoidance – Construction

The following measure shall be required for construction activities that are proposed adjacent to the Open Space Reserve or lands supporting sensitive vegetation communities and/or biological resources:

- Prior to commencement of clearing or grading activities, fencing (e.g., silt fencing, orange construction fencing, and/or chain-link fencing as determined by campus planning) shall be installed around the approved limits of disturbance to prevent errant disturbance of sensitive biological resources by construction vehicles or personnel. All movement of construction contractors, including ingress and egress of equipment and personnel, shall be limited to designated construction zones. This fencing shall be removed upon completion of all construction activities.
- No temporary storage or stockpiling of construction materials shall be allowed in Open Space Reserve lands, and all staging areas for equipment and materials shall be located at least 50 feet where space permits on the site, or less as determined appropriate by a qualified biologist from the edge of these areas. This prohibition shall not be applied to facilities that are planned to traverse Open Space Reserve lands (e.g., trails and utilities). Staging areas and construction sites in proximity to the Open Space Reserve lands shall be kept free of trash, refuse, and other waste; no waste dirt, rubble, or trash shall be deposited in these areas.
- Appropriate setbacks or barriers (e.g., fencing) shall be implemented to minimize human activity impacts. Buffer areas shall be vegetated with native species to help screen these indirect effects.
- Active construction areas shall be sprayed with water periodically to minimize dust.

- Equipment to extinguish small brush fires (e.g., from trucks or other vehicles) shall be present on-site during all phases of project construction activities, along with personnel trained in the use of such equipment. Smoking shall be prohibited in construction areas adjacent to flammable vegetation.
- Temporary night lighting shall not be used during construction unless determined to be absolutely necessary (e.g., time sensitive construction activities). If night lighting is necessary, lights shall be directed away from sensitive vegetation communities and lands designated as Open Space Reserve and shielded to minimize temporary lighting of the surrounding habitat.

MM BIO-6B Sensitive Communities Indirect Impact Avoidance – Operation

The following measure shall be required for operation activities adjacent to the Open Space Reserve or lands supporting sensitive vegetation communities and/or biological resources:

- Landscaping adjacent to Open Space Reserve lands shall comply with the following requirements to prevent the introduction of invasive species:
 - Appropriate landscaping shall be selected based on the vegetation communities in the portion of the Open Space Reserve adjacent to the project. In areas supporting native (or disturbed native) vegetation communities, revegetation of impacted slopes shall be with appropriate native plant materials.
- Permanent lighting in or adjacent to Open Space Reserve lands shall be selectively placed, shielded, and directed to minimize potential impacts to sensitive species. In addition, lighting from buildings or parking lots/structures abutting Open Space Reserve lands shall be shielded and/or screened by vegetation to the extent feasible.
- The following best management practices shall be implemented in Open Space Reserve lands and in areas that interface with Open Space Reserve lands to address runoff/water quality impacts from landscaping:
 - Integrated Pest Management principles (UC Integrated Pest Management Program) shall be implemented to the extent practicable for chemical pesticides, herbicides, and fertilizers. Examples of such measures may include, but are not limited to, alternative weed/pest control measures (e.g., removal by hand) and proper application techniques (e.g., conformance to manufacturer specifications and legal requirements).
 - Irrigation for project landscaping shall be minimized and controlled through efforts such as designing irrigation systems to match landscaping water needs, using sensor devices to prevent irrigation during and after precipitation, and using automatic flow reducers/shut-off valves that are triggered by a decrease in water pressure from broken sprinkler heads or pipes.
- Barriers (e.g., fencing or walls) and/or signage directing people away from sensitive vegetation communities and habitat shall be installed on designated pathways and trails in and adjacent to Open Space Reserve lands to minimize unauthorized human activity. Barriers (e.g., fencing or walls) shall consist of an approximately 3-foot-high wooden barrier. Chain-link fencing shall not be used for barrier.
- Projects adjacent to Open Space Reserve lands shall install signage along the boundary of the Open Space Reserve lands, indicating the presence of lands supporting sensitive habitat.
- Projects adjacent to Open Space Reserve lands shall install fencing or other visual/physical barriers (such as appropriate landscaping) to discourage human encroachment into the Open

Space Reserve lands in areas where trespass is likely to occur (gradual slopes; areas of low, open vegetation; areas of previous disturbance, etc.).

MM BIO-7 Sensitive Vegetation Communities Mitigation

Impacts on sensitive vegetation communities shall be avoided to the extent practicable. If an avoidance alternative is not feasible and a practicable alternative is selected instead, a Determination of Biologically Equivalent or Superior Preservation shall be prepared to ensure replacement of any lost functions and values of habitat as it relates to MSHCP Covered Species.

If a future project would result in removal of sensitive vegetation, then compensatory mitigation would be required depending on the amount of vegetation impacted. Mitigation shall ensure no net loss of habitat following implementation of a future project. This mitigation may be in the form of habitat preservation, restoration, enhancement, and/or establishment (i.e., creation).

Compensatory mitigation shall be in the form of permittee-responsible mitigation, in which the permittee maintains liability for the construction and long-term success of the mitigation site, or through mitigation banking or an in-lieu fee program, where liability for project success is transferred to a third party (i.e., a mitigation bank or an in-lieu fee sponsor). For permittee responsible mitigation, preparation of a Habitat Mitigation Monitoring Plan may be required.

MM BIO-8 MSHCP Conservation Area Construction Noise Reduction

The following measures shall be followed during construction of projects adjacent to MSHCP conservation areas (i.e., Criteria Cell 634):

- *Staging Area.* Provide staging areas on-site to minimize off-site transportation of heavy construction equipment. These areas shall be located to maximize the distance between activity and MSHCP conservation areas. This should reduce noise levels associated with most types of idling construction equipment.
- *Avoid Operating Equipment Simultaneously.* Whenever possible, ensure that construction activities are scheduled to avoid operating several pieces of equipment simultaneously, which causes high noise levels.
- *Inspections.* The contractor shall inspect construction equipment to ensure that such equipment is in proper operating condition and fitted with standard factory silencing features. Construction equipment shall utilize all standard factory silencing features, such as equipment mufflers, enclosures, and barriers.
- *Newest Power Construction Equipment.* The newest available power construction equipment with standard recommended noise shielding and muffling devices shall be used.
- *Mufflers.* During project grading and construction, all equipment, fixed or mobile, shall be operated with closed engine doors and shall be equipped with properly operating and maintained mufflers consistent with manufacturers' standards. Use of manufacturer-certified mufflers associated with construction equipment has been shown to reduce noise levels by 8 to 10 dBA.
- *Smart Back-up Alarms.* Mobile construction equipment shall have smart back-up alarms that automatically adjust the sound level of the alarm in response to ambient noise levels. Alternatively, back-up alarms should be disabled and replaced with human spotters to ensure safety when mobile construction equipment is moving the reverse direction.

- *Idling.* All construction vehicles, such as bulldozers and haul trucks, shall be prohibited from idling in excess of 5 minutes, which is consistent with recommended strategies to reduce and/or eliminate diesel idling

Significance After Mitigation

Implementation of Mitigation Measures **MM BIO-1A and MM BIO-1B** would reduce potential impacts to special-status species to less than significant levels by avoiding impacts to individual burrowing owl. Implementation of Mitigation Measures **MM BIO-2 through MM BIO-8** would reduce potential direct and indirect impacts to candidate, sensitive, or special-status species to a less than significant level.

IMPACT BIO-2 HAVE A SUBSTANTIAL ADVERSE EFFECT ON ANY RIPARIAN HABITAT OR OTHER SENSITIVE NATURAL COMMUNITY IDENTIFIED IN LOCAL OR REGIONAL PLANS, POLICIES, REGULATIONS, OR BY THE CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE OR U.S. FISH AND WILDLIFE SERVICE.

CONSTRUCTION AND OPERATION OF PROJECTS DEVELOPED UNDER THE PROPOSED 2021 LRDP WOULD POTENTIALLY HAVE SUBSTANTIAL ADVERSE EFFECTS ON RIPARIAN HABITAT OR OTHER SENSITIVE NATURAL COMMUNITY. IMPLEMENTATION OF MITIGATION MEASURES MM BIO-6A, MM BIO-6B, AND MM BIO-7 WOULD REDUCE IMPACTS TO LESS THAN SIGNIFICANT.

Direct Impacts

Prickly pear scrub is considered sensitive by the CDFW, which occurs naturally on the slopes along the UCR Botanic Gardens Road and in a small patch in West Campus (see Figure 4.4-2). Vasey's prickly pear (*Opuntia vaseyi*) dominates, interspersed with cholla (*Cylindropuntia sp.*) and brittle bush (Psomas 2019). Approximately 8 acres of mixed riparian habitat is also present in the UCR campus, primarily in Gage Basin (the western end of the University Arroyo north of University Avenue) and the tributary of the University Arroyo between Pentland Residence Hall, Lothian Residence Hall, and Glen Mor 1 and Glen Mor 2 (see Figure 4.4-2). CDFW does not consider mixed riparian habitat a sensitive natural community.

The proposed 2021 LRDP would designate the mixed riparian areas in the Gage Basin area and University arroyo, and areas with prickly pear scrub, as Open Space Reserve and development under the 2021 LRDP would avoid direct impacts to these natural communities. The proposed 2021 LRDP also includes policies to protect and enhance signature open spaces, including the Open Space Reserve lands, where these riparian areas and natural communities are located. It is anticipated that significant direct impacts to riparian and sensitive natural communities would be minimal and **less than significant**.

Indirect Impacts

Indirect impacts to riparian habitat or other sensitive natural communities could occur during construction as well as post-construction/operations. The majority of projects anticipated in the proposed 2021 LRDP would be situated in non-sensitive areas of the UCR campus. However, some projects may occur in or adjacent to the prickly pear scrub or mixed riparian areas. These projects have the potential to cause indirect effects on the natural habitats on UCR, and such impacts are further discussed below. The potential indirect impacts that could occur to vegetation communities, including the sensitive plants and animals that occupy those habitats, during implementation of the proposed 2021 LRDP, are described below.

WATER QUALITY

In general, water quality in riparian areas could be adversely affected by potential surface runoff, contamination (especially from petroleum products), and sedimentation during construction. Water quality degradation may adversely affect vegetation and wildlife that depend upon these resources. However, as discussed in Section 4.10, *Hydrology and Water Quality*, construction and operation of new development under the 2021 LRDP would conform to NPDES water quality regulations requiring the capture and treatment of runoff prior to discharge, in addition to attenuation measures to address increases in flow volumes and velocities. Compliance with current stormwater regulations would reduce potential operational water quality impacts on biological resources during the implementation of the 2021 LRDP.

Adherence to the Statewide General Construction Activity Stormwater Permit and continued implementation of the NPDES Phase II requirements, including the implementation of a Stormwater Management Program and BMPs, would minimize indirect water quality and hydromodification impacts from project construction and operation.

FUGITIVE DUST

In general, fugitive dust produced by construction could disperse onto sensitive vegetation adjacent to construction sites. The resulting dust covering could reduce native plant productivity (by reducing the amount of photosynthesis due to dust-covered leaves) and affect species that depend on the vegetation. However, as discussed in Section 4.2, *Air Quality*, development under the LRDP would have to comply with SCAQMD District Rule 403 which requires dust suppression measures including watering, application of environmentally safe soil stabilization materials, and/or roll compaction to prevent the creation of dust. Therefore, impacts from dust would be **less than significant**.

INVASIVE SPECIES

Non-native plants could colonize sites disturbed by construction and could potentially spread into adjacent native vegetation communities. Some non-native plants are highly invasive and can disrupt native habitats by reducing native species diversity, and potentially adversely affect native wildlife that are dependent on native plant species. UCR prefers the landscape that includes landscapes that use native or climate adapted plants. Some of these plant species, however, are listed in Table 6-2 of MSHCP Section 6.1.4 and are therefore considered invasive. The potential exists for the spread of invasive species from new campus development into adjacent habitats and would be considered significant. Implementation of **MM BIO-6B** would reduce this to **less than significant with mitigation incorporated**.

EDGE EFFECTS/HUMAN ACTIVITY

Edge effects occur when blocks of habitat are fragmented, resulting in a higher ratio of development edge to native vegetation communities (i.e., an increase in the urban/wildland interface). These edges increase the potential for non-native plant species to invade native vegetation communities and for native and non-native predators to access prey that may have otherwise been protected within large, contiguous blocks of habitat. Impacts to native vegetation communities and wildlife from edge effects could occur along the edges of the Open Space Reserve, particularly in the eastern areas of East Campus where prickly pear scrub has been documented, and near the University Arroyo and Gage Basin.

As campus population increases, corresponding increases in human activity in and adjacent to these areas could result in degradation of sensitive vegetation communities by fragmenting habitat and forming edges through the creation of unauthorized trails. Indirect impacts include pedestrians and bicyclists that may leave established trails and take short cuts, potentially resulting in erosion and damage to native vegetation. Erosion often inhibits the reestablishment of vegetation even if the unauthorized trail (short cut) is blocked-off, necessitating additional repair measures. Impacts from human activity along the edges and into the Open Space Reserve are significant without mitigation. Implementation of **MM BIO-6A, MM BIO-6B, and MM BIO-7** would reduce **impacts to less than significant with mitigation incorporated**. These measures include installation of signage and fencing to avoid unofficial pedestrian and bike trails.

INADVERTENT ENCROACHMENTS

Inadvertent impacts to sensitive natural vegetation or habitat could occur outside pre-approved development limits (defined during the project-level CEQA process) during construction, such as construction activities occurring outside pre-approved and delimited project limits.

Due to potential direct and indirect impacts, the proposed 2021 LRDP may have a substantial adverse effect on riparian habitat or other sensitive natural community and impacts would be considered significant without mitigation. Implementation of Mitigation Measures **MM BIO-6A, MM BIO-6B, and MM BIO-7** would reduce **impacts to less than significant with mitigation incorporated**.

RIPARIAN/RIVERINE, VERNAL POOL, AND FAIRY SHRIMP HABITAT

Impact BIO-3 below provides an impact analysis to riparian/riverine, vernal pool, and fairy shrimp habitat.

Mitigation Measures

Mitigation Measures **MM BIO-6A**, Sensitive Communities Indirect Impact Avoidance - Construction, **MM BIO-6B**, Sensitive Communities Indirect Impact Avoidance – Operation, and **MM BIO-7**, Sensitive Vegetation Communities Mitigation would reduce impacts to sensitive vegetation communities to a less than significant level.

Significance After Mitigation

There would be a less-than-significant impact to riparian habitat or other sensitive natural community with the implementation of Mitigation Measures **MM BIO-6A, MM BIO-6B, and MM BIO-7**, which address direct and indirect impacts to sensitive plant species.

Impact BIO-3 HAVE A SUBSTANTIAL ADVERSE EFFECT ON STATE OR FEDERALLY-PROTECTED WETLANDS (INCLUDING, BUT NOT LIMITED TO MARSH, VERNAL POOL, COASTAL, ETC.) THROUGH DIRECT REMOVAL, FILLING, HYDROLOGICAL INTERRUPTION, OR OTHER MEANS.

THE PROPOSED 2021 LRDP MAY RESULT IN SIGNIFICANT ADVERSE EFFECTS ON STATE AND FEDERALLY-PROTECTED WETLANDS. MITIGATION MEASURE MM BIO-9 WOULD REQUIRE A JURISDICTIONAL DELINEATION, AND CONSULTATION AND PERMITTING WITH APPROPRIATE STATE AND FEDERAL AGENCIES, WHICH WOULD REDUCE IMPACTS TO LESS THAN SIGNIFICANT.

Riparian/Riverine, Vernal Pool, and Fairy Shrimp Habitat

Section 6.1.2 of the MSHCP describes the process to protect species associated with riparian/riverine areas and vernal pools. As defined in the MSHCP, riparian/riverine areas are lands which contain habitat dominated by trees, shrubs, persistent emergents, or emergent mosses and lichens, which occur close to or depend on a nearby freshwater source or areas that contain a freshwater flow during all or a portion of the year. These areas may support one or more species listed in Section 6.1.2 of the MSHCP. Vernal pools are seasonal wetlands that occur in depressions, typically have wetland indicators that represent all three parameters (soils, vegetation, and hydrology), and are defined based on vernal pool indicator plant species during the wetter portion of the growing season but normally lack wetland indicators associated with vegetation and/or hydrology during the drier portion of the growing season. Vernal pools typically comprise habitat for fairy shrimp.

The 2019 Psomas report identified the following potential jurisdictional resources on the UCR campus, which may include riverine wetlands and freshwater ponds:

- Four basins in West Campus mapped as freshwater ponds classified as PUBK (i.e., in the Palustrine System with unconsolidated bottom and artificially flooded water regime). These artificial basins were also observed during the field survey and contain surface water.
- The basin in the UCR Botanic Gardens that was artificially created as part of the UCR Flood Control Management Plan for the University Arroyo Watershed
- The basin adjacent to undeveloped open space in southeastern East Campus
- The Box Springs Arroyo in West Campus
- The University Arroyo and tributaries in East Campus
- An arroyo also traverses the northern edge of the UCR Botanic Gardens, along the road leading to the garden, and into the UCR Botanic Gardens basin.
- Additional small drainage features are located in the hills in the southeastern corner of the campus.

Implementation of the proposed 2021 LRDP could result in minor development, such as stormwater management infrastructure, habitat restoration and management activities, trails, pedestrian or bicycle paths, in designated Open Space Reserve areas or other land use areas, including arroyos that may contain federally-protected seasonal wetlands or jurisdictional WOUS. This minor development could result in direct impacts to wetlands, by removal, filling, or hydrological interruption. Therefore, development under the proposed 2021 LRDP would result in a significant impact to State- or federally-protected wetlands.

Securing a Streambed Alteration Agreement from the CDFW, and a Section 404 permit under the CWA, would protect riparian corridors and jurisdictional wetland and non-wetland waters (e.g., stream channels) in the project area. If impacts to these areas would occur, UCR would need to

obtain these permits prior to any grading or construction that may impact a riparian area, stream channel, or wetland, as applicable (**MM BIO-9**). While the final conditions of the permit or agreement will be determined through coordination with these agencies, the provisions of these permits would meet the State and federal “no net loss” wetlands policy. As such, impacts are considered to be **less than significant with mitigation incorporated**.

Mitigation Measures

MM BIO-9 Jurisdictional Delineation of Waters and Wetlands

During the project planning process, if a project has vegetation mapped as potential wetlands or the project site contains or is located immediately adjacent to a natural drainage course, a qualified biologist shall conduct a jurisdictional delineation. The jurisdictional delineation shall use current regulatory guidance to identify the presence of potential regulated waters and wetlands in the project vicinity. If there is potential for the project to adversely affect wetlands or waters, UCR shall conduct a pre-application meeting with appropriate agencies (USACE, the RWQCB, and/or the CDFW) prior to submittal of permit applications to discuss existing conditions, to confirm the agency’s jurisdiction over water resources in the survey area, to discuss impacts to these resources that would result from the project, and to discuss the regulatory permitting process.

Following the pre-application meeting, UCR shall prepare and process appropriate permits, which may include a Section 404 Permit, a Section 401 Water Quality Certification, a Report of Waste Discharge, and/or a CDFW Section 1602 Notification of Lake or Streambed Alteration. If there is potential for the project to adversely affect wetlands or waters, impacts shall be avoided and minimized during the project design process, to the extent practicable, and unavoidable impacts shall be mitigated as discussed with each regulatory agency on a project-by-project basis and pursuant to applicable wetland permit conditions.

Compensatory mitigation may include restoration (i.e., re-establishment or rehabilitation), establishment (i.e., creation), enhancement, and/or preservation of jurisdictional resources. Compensatory mitigation may occur through permittee-responsible mitigation, payment to an in-lieu fee program, or purchase of compensatory mitigation credits from an approved mitigation bank. Mitigation ratios (i.e., the amount of mitigation acreage compared to the amount of impacted habitat) shall be negotiated with each regulatory agency on a project-by-project basis.

Significance After Mitigation

Mitigation Measure **MM BIO-9** would reduce impacts to State or federally-protected wetlands to a less than significant level.

Impact BIO-4 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.

THE PROPOSED 2021 LRDP WOULD NOT LOCATE SUBSTANTIAL DEVELOPMENT NEAR MSHCP CONSERVATION AREAS WITH POTENTIAL FOR WILDLIFE MOVEMENT OR NATIVE NURSERY SITES, AND IMPACTS WOULD BE LESS THAN SIGNIFICANT.

UCR is located at the edge of urban development in the eastern portion of the City. Because of this, there is no regional connection to other open space areas to the north or west. The southeast corner of the campus consists of undeveloped open space linking the Box Springs Mountains to the northeast with Sycamore Canyon Wilderness Park to the southwest. These southeastern portions of campus are designated Open Space Reserve and UCR Botanic Gardens, consistent with existing uses.

Most new development proposed in 2021 LRDP would occur in the Academics & Research and northern areas of East Campus such as Student Neighborhood, University Avenue Gateway, and Canyon Crest Gateway. A new interpretive center is programmatically assumed in the UCR Botanic Gardens designation on East Campus, similar to the existing structures. The designated Open Space Reserve is the land use located in the MSHCP Criteria Cell 634. This area would mainly be used for conservation of natural lands, and there are currently no planned or foreseeable development within the Open Space Reserve areas. Therefore, human activity is not anticipated to substantially impact the movement of native wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites, and impacts would be **less than significant**.

Mitigation Measures

No mitigation measures would be required.

Significance After Mitigation

There would be less than significant impacts without mitigation to wildlife movement, wildlife corridors, or nursery sites.

4.4.4 Cumulative Impacts

The following factors are considered with respect to analyzing cumulative impacts to biological resources:

- The cumulative contribution of other approved and proposed projects to fragmentation of open space in the project vicinity
- The loss of sensitive habitats and species
- The contribution of the project to urban expansion into natural areas
- Isolation of open space in the vicinity by proposed/future projects

Over the last half-century or more, naturally vegetated open areas diminished as the landscape surrounding the UCR campus has been built out with residential, educational, and commercial uses. However, as shown on

Figure 4.4-1, the UCR campus is within one MSHCP criteria cell and within proximity to four MSHCP criteria cells, including those with MSHCP conserved lands. The UCR campus is just west of the Box

Springs Mountain Reserve, Box Springs Park, and many contiguous MSHCP criteria cells north of the City of Moreno Valley.

Most future development and redevelopment under the proposed 2021 LRDP would be infill in existing urban areas. Implementation of the proposed 2021 LRDP would conserve approximately 154.7 acres of land in the Open Space Reserve land use designation, which would be an increase of 24.3 acres over the 2005 LRDP and would direct UCR to protect those areas from major development.

The proposed 2021 LRDP would contribute to natural land and habitat preservation. The project's contribution to cumulative Impact BIO-1 and Impact BIO-2 is considered **cumulatively considerable without mitigation**. However, implementation of Mitigation Measures **MM BIO-1A through MM BIO-8** would reduce direct and indirect impacts to wildlife and sensitive vegetation and habitat to less than significant. If a future project under the proposed 2021 LRDP would result in removal of sensitive vegetation, then compensatory mitigation may be required depending on the amount of vegetation impacted, which would ensure no net loss of habitat following implementation of the project. As described in Impact BIO-3, impacts to sensitive habitats (i.e., jurisdictional wetlands, riparian vegetation, and aquatic habitat) under the proposed 2021 LRDP would be cumulatively considerable without mitigation. Implementation of Mitigation Measure **MM BIO-9**, however, would reduce these cumulative impacts through identification, avoidance, and project-specific permitting requirements through appropriate regulatory agencies (e.g., Section 404 permit, Section 401 certification, CFGC Section 1602 authorization). Mitigation for wetlands would be coordinated with the appropriate regulatory agencies on a project-by-project basis to ensure no net loss of functions and values.

It is anticipated that for other developments that would have significant impacts on these resources, mitigation measures such as preconstruction surveys for sensitive biological resources, mitigation for impacts to sensitive habitats and/or sensitive biological resources, and payment of all MSHCP fees including the Development Mitigation Fee, would be required. Other developments would also be required to comply with all applicable laws and regulations governing biological resources including all MSHCP policies and measures regarding cumulative impacts.

With the proposed mitigation measures, coupled with federal, State, and UCR objectives and policies, development under the proposed 2021 LRDP would have less than significant impacts to sensitive habitats and biological resources. In addition, individual development proposals in the region are reviewed separately by the appropriate jurisdiction and undergo appropriate environmental review when it is determined that the potential for significant impacts exist. If future projects would result in impacts to sensitive habitats and biological resources, impacts to such resources would be addressed on a case-by-case basis. Furthermore, all projects in the MSHCP area are required to comply with the MSHCP. As such, projects would not contribute to cumulative impacts on sensitive habitats and biological resources outside the project site. Therefore, impacts related to sensitive habitats and biological resources **would not be cumulatively considerable**.

4.4.5 References

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