

Appendix E: Conservation and Open Space Element Resources

I. Open Space Areas in Los Angeles County

Los Angeles County offers a wide variety of open space and natural areas. The following open space and natural areas are managed by the County or are contained in primarily unincorporated areas of the County:

Angeles National Forest

The Angeles National Forest was established by Executive Order in 1892 and is managed by the U.S. Forest Service. The Forest covers over 650,000 acres. The Angeles National Forest manages the watersheds within its boundaries to provide water to Southern California and to protect surrounding communities from catastrophic floods. The land within the National Forest is diverse in appearance and terrain, and provides many opportunities for recreational and scenic enjoyment. Much of the National Forest is covered with dense chaparral, pine and fir covered slopes as elevations in the National Forest range from 1,200 to 10,064 feet.

Deane Dana Friendship Park

Deane Dana Friendship Park, which is a 123-acre park located on the Palos Verdes Peninsula, affords dramatic panoramic views of Catalina Island, Los Angeles and Long Beach harbors, the City of Los Angeles to the north, and the San Gabriel and San Bernardino mountain ranges. There are hiking trails throughout the park. The County is currently working with the U.S. Fish and Wildlife Service to restore coastal sage scrub habitat at the park.

Devil's Punchbowl Natural Area

Devil's Punchbowl is one of the most spectacular geologic formations in California. The 1,310-acre natural area consists of rugged wilderness rock formations along the San Andreas Fault on the north slope of the San Gabriel Mountains. The terrain climbs from 4,200 feet to 6,500 feet in elevation, with natural plant and animal communities ranging from desert scrub to pine forests, and a seasonal stream runs through the natural area.

Eaton Canyon Natural Area

Situated at the base of Mt. Wilson, this 190-acre natural area contains several plant and native habitat communities. Eaton Creek flows through the Canyon during all but the summer months. The 7,600-square-foot nature center contains displays of local flora and fauna, ecosystem concepts and live animals. The natural area offers five miles of nature trails and an equestrian trail, and serves as a trailhead to the Mt. Wilson Toll Road and Henninger Flats.

High Desert Wildlife and Wild Flower Sanctuaries

The County currently operates eight wildlife sanctuaries and one wildflower sanctuary in the high desert of Antelope Valley. Ranging from 2,500 to over 3,600 feet in elevation and encompassing more than 2,000 acres, the sanctuaries offer opportunities for spring wildflower viewing, bird watching, hiking and horseback riding. Wildlife seen on the preserves varies from earthbound creatures, such as the horned lizards, chuckwallas and rattlesnakes, to majestic prairie falcons and golden eagles. Insect life is most abundant during the warmer months, and in spring, the Joshua tree

and other large shrubs provide nesting sites for a variety of songbirds. Other protected animals are the kit fox, desert tortoise and Mojave ground squirrel.

Kenneth Hahn State Recreation Area

The Kenneth Hahn State Recreation Area, managed by the Los Angeles County Department of Parks and Recreation, includes large areas of native coastal sage scrub habitat, lawns and landscaped areas, picnic sites, tot lots, a fishing lake, a lotus pond, a community center, and five miles of trails. One of the most actively used features is the park's more than seven miles of footpaths and trails.

Michael D. Antonovich Open Space Preserve

The Michael D. Antonovich Open Space Preserve offers 500 acres of dedicated open space in the Santa Susana Mountains and is managed by the Mountains Recreation and Conservation Authority (MRCA). Located on the northern border of Los Angeles, this open space preserve offers sweeping views of the Santa Clarita and San Fernando Valleys and contains a diversity of flora and fauna, from big cone Douglas fir, California walnut and oak trees to black bears, deer and mountain lions. The Preserve also provides important habitat connections through its numerous wilderness trails in the Rim of the Valley corridor of the Santa Clarita Woodlands Park.

Placerita Canyon Natural Area

This 350-acre natural area is located in an east-west running canyon featuring oak groves, chaparral-covered slopes and a sycamore-lined stream. Placerita Canyon is home to the famous "Oak of the Golden Dream," where gold was "first" discovered in California in 1842 and "Walker's Cabin," a reminder of early frontier living. The Placerita Canyon maintains eight miles of hiking trails.

San Dimas Canyon Nature Center

Located between San Dimas and Sycamore Canyons and bordering the Angeles National Forest, this park offers a variety of plant and animal communities. Nature trails meander through the more than 100 acres of chaparral and riparian vegetation. A one-mile nature trail loop begins in an oak woodland and climbs gently into chaparral-covered foothills. This park also features a wildlife sanctuary for injured or non-releasable native animals and a raptor rehabilitation flight cage.

Santa Fe Dam Recreation Area

The 836-acre Santa Fe Dam Recreation Area is located in Irwindale in the San Gabriel Valley. The Recreation Area is home to the Santa Fe Dam Nature Center, which focuses on the plant life and wildlife of the alluvial fan of the San Gabriel River. The plant community of the river fan, Alluvial Fan Sage Scrub, is among the rarest and last of its kind in Los Angeles County. Rare and endangered plants, birds, and other wildlife species inhabit the Recreation Area. Examples include: cactus wrens, California gnatcatchers, scissor-tail flycatchers, horned lizards, and kangaroo rats.

Santa Monica Mountains National Recreation Area

The 150,000-acre Santa Monica Mountains National Recreation Area is a part of the National Park System, which encompasses the mountain range from the Oxnard Plain in Ventura County, past Topanga State Park to Franklin Canyon and the Hollywood Bowl in Los Angeles. The Recreation Area preserves natural habitats, historical and cultural sites, offers recreational opportunities, and acts to improve the air quality for the Los Angeles basin. Covered by chaparral, oak woodlands, and coastal sage scrub, it is home to many species listed as rare, threatened, or endangered.

Schabarum Regional Park

The 640-acres Schabarum Regional Park is comprised of open space and natural areas, including picturesque canyons and rolling hills for hiking, biking and horseback riding. Over 90 percent of this park has been left in its natural state for the public to enjoy.

Vasquez Rocks Natural Area Park

This 945-acre natural area is a popular hiking, picnicking, and equestrian area. The park is located in the high desert near Agua Dulce Springs and features unusual rock formations, Tatavian Indian sites, and a seasonal stream. The principal plant communities are desert, chaparral, and riparian.

Whittier Narrows Natural Area

This natural area occupies approximately 300 acres in the southern portion of Whittier Narrows Recreation Area. Bordering the San Gabriel River, the Natural Area is home to several habitats with the dominant one being a riparian woodland. The southeastern portion of the site features four lakes that provide a winter sanctuary for migrating waterfowl and are opened by special permit for birding and photography. This area is near lakes and contains many plants and animals that are typically found within a wetland community.

II. Conservancies

The County works with various conservancies to maintain and protect open space land in Los Angeles County. Land conservancies are private, nonprofit organizations that share a common goal: to conserve land for the benefit of people and nature. Land conservancies are generally started by community residents who wish to preserve a certain area or piece of open space land on a local or regional scale. As a private organization, land conservancies have the flexibility to acquire, hold and manage land in the public interest, and also to preserve open space through voluntary conservation agreements with landowners, which permanently protect the land from development while the title remains with the landowner. Most conservancies work in partnership with local governments and provide various levels of educational programs and land restoration and/or land enhancement projects.

The County works with a number of conservancies to preserve and protect the County's open spaces:

Antelope Valley Conservancy

The Antelope Valley Conservancy (AVC) is a local land trust conservancy that obtains and stewards lands that are important to the community for quality of life, scenic beauty, and plant and animal habitat. AVC focuses on Joshua Tree woodlands, the keystone species of the Mojave Desert, which supports a wide variety of native species. Most of the Conservancy's targeted preservation lands are in Los Angeles County's designated Significant Ecological Areas. (<http://www.avconservancy.org/>)

Baldwin Hills Conservancy

The Baldwin Hills Conservancy (BHC) was created by the State in 2000 to acquire open space and manage public lands within the Baldwin Hills area and to provide recreation, restoration and protection of wildlife habitat within the territory for the public's enjoyment and educational experience. Specifically, BHC is responsible for: implementing the Baldwin Hills Park Master Plan; prioritizing and implementing acquisition of additional recreational and open space land for the expansion of Kenneth Hahn State Recreation Area; conducting planning activities for the area; and

developing and coordinating a program of resource stewardship for optimum recreational and natural resource value based on the needs of the surrounding community. (<http://www.bhc.ca.gov/>)

California Coastal Conservancy

Established in 1976, the Coastal Conservancy is a State agency that uses entrepreneurial techniques to purchase, protect, restore, and enhance coastal resources, and to provide access to the shore. The Conservancy works in partnership with local governments, other public agencies, nonprofit organizations, and private landowners. To date, the Conservancy has undertaken more than 1,800 projects along the 1,100 mile California coastline. (<http://www.scc.ca.gov/>)

Catalina Island Conservancy

In 1974, the Santa Catalina Island Company entered into a fifty year Open Space Easement agreement with Los Angeles County, guaranteeing public recreational and educational use of 41,000 acres of Catalina Island, consistent with good land conservation practices. The Santa Catalina Island Company subsequently deeded this land to the non-profit Catalina Island Conservancy (formed in 1972), along with an additional 1,135 acres. The Catalina Island Conservancy continues to manage 42,135 acres on Catalina Island, providing the highest level of conservation protection to 88 percent of the island. The Conservancy's mission is "to be a responsible steward of its lands through a balance of conservation, education and recreation." The conservation activities include wildlife management, a plant ecology program, invasive plant management, restoration of degraded areas and scientific research by many different researchers from across California and the country. Over 60,000 children and youth come to Catalina Island every year to various educational camps. There are also several campgrounds and 140 miles of hiking and biking trails on Catalina, including the Trans-Catalina Trail, which will allow visitors to access the Island in low-impact ways. Catalina Island is also a well-known and long-standing destination for boaters. (<http://www.catalinaconservancy.org/>)

Mountains Recreation and Conservation Authority

Established in 1985, the Mountains Recreation and Conservation Authority (MRCA) is a partnership between the Santa Monica Mountains Conservancy, the Conejo Recreation and Park District, and the Rancho Simi Recreation and Park District. The MRCA is dedicated to the preservation and management of open space and parkland, watershed lands, trails, and wildlife habitat. The MRCA manages almost 60,000 acres of public lands and parks, and provides comprehensive education and interpretation programs for the public. The MRCA works in cooperation with the SMMC and other local partners to acquire parkland, participate in vital planning processes, and complete major park improvement projects. The MRCA also provides natural resources and scientific expertise, critical regional planning services, park construction services, park operations, fire prevention, ranger services, and educational and leadership programs for youth. (<http://www.mrca.ca.gov/>)

Newhall Ranch High Country Recreation and Conservation Authority

The Newhall Ranch High Country Recreation and Conservation Authority is a joint powers authority formed by SMMC, the County of Los Angeles, and the City of Santa Clarita. Its purpose is the conservation and management of public open space lands set aside for habitat and recreation pursuant to the Los Angeles County Board of Supervisors approval of the Newhall Ranch project, the Westridge project, and any other such open space lands dedicated by Newhall Land Company or its successors. (<http://smmc.ca.gov/NRHCRCA.asp>)

Puente Hills Landfill Native Habitat Preservation Authority

The Puente Hills Landfill Native Habitat Preservation Authority (Habitat Authority) is a joint powers

authority with a board of directors consisting of the City of Whittier, County of Los Angeles, Sanitation Districts of Los Angeles County, and the Hacienda Heights Improvement Association. The Habitat Authority was created in 1994 as mitigation for the Puente Hills Landfill. To date, the Habitat Authority manages 3,860 acres of preserved public open space. The Habitat Authority's main focus has been to acquire the remaining open space within its jurisdiction, with special consideration given to the Hacienda Heights area. (<http://www.habitatauthority.org/>)

San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy

The San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy (RMC) was created by the California Legislature in 1999. RMC is one of nine conservancies within the California Resources Agency. Its mission is to preserve open space and habitat in order to provide for low-impact recreation and educational uses, wildlife habitat restoration and protection, and watershed improvements. RMC's territory covers eastern Los Angeles County and western Orange County, a vast and varied area that includes mountains, valleys, rivers, coastal plain, and coastline. (<http://www.rmc.ca.gov/>)

San Gabriel Mountains Regional Conservancy

The San Gabriel Mountains Regional Conservancy (SGMRC) is devoted to watershed management and a great variety of other projects in the San Gabriel River Watershed of eastern Los Angeles County. Included in the region are the San Gabriel Mountains, the San Gabriel River Valley and related areas. (<http://www.sgmrc.org/>)

Santa Clarita Watershed Recreation and Conservation Authority

The Santa Clarita Watershed Recreation and Conservation Authority (SCWRCA) was established in 1993 by the City of Santa Clarita and the Santa Monica Mountains Conservancy in order to cooperatively plan for the preservation of open space, trails, parkland, and watershed protection in the Santa Clarita area and the upper Santa Clara River Watershed. In 2002, the SCWRCA finalized the City's and Conservancy's long-standing efforts to acquire Whitney Canyon Ranch. The 442-acre property is the first to be owned by SCWRCA, heralding a new phase in the cooperation between the entities. (<http://smmc.ca.gov/SCWRCA.asp>)

Santa Monica Mountains Conservancy

The Santa Monica Mountains Conservancy (SMMC) was established by the California State Legislature in 1980. Since that time, it has helped to preserve over 60,000 acres of parkland in both wilderness and urban settings, and has improved more than 114 public recreational facilities throughout Southern California. Through direct action, alliances, partnerships, and joint powers authorities, the Conservancy's mission is to strategically buy back, preserve, protect, restore, and enhance treasured pieces of Southern California to form an interlinking system of urban, rural and river parks, open space, trails, and wildlife habitats that are easily accessible to the general public. (<http://smmc.ca.gov/>)

Watershed Conservation Authority

The Watershed Conservation Authority (WCA) was created in 2003 as a joint powers entity of the RMC and the Los Angeles County Flood Control District. The focus of the WCA is on projects that will provide open space, habitat restoration, and watershed improvement projects in the watersheds of both the San Gabriel River and the Lower Los Angeles River. (<http://watershedconservationauthority.org/>)

Wildlife Corridor Conservation Authority

The Wildlife Corridor Conservation Authority (WCCA) was established to provide for the proper planning, conservation, environmental protection, and maintenance of lands within the Puente-Chino Hills corridor area. Its goal is to assure that sufficient continuity of habitat can be preserved to maintain a functioning wildlife corridor made up of about 40,000 acres of land located between the Santa Ana Mountains and Whittier Hills. WCCA's governing board consists of representatives from the cities of Brea, Whittier, Diamond Bar, La Habra Heights, the Santa Monica Mountains Conservancy, California Department of Parks and Recreation, California Department of Fish and Game, Los Angeles County, and two public members. (<http://smmc.ca.gov/WCCA.html>)

III. Significant Ecological Areas

Background

History of SEA Program

The identification of important biological resources and preservation of Significant Ecological Areas (SEAs) has a long standing history in Los Angeles County. In 1970, the County adopted the Environmental Development Guide, which contains a schematic map called the Open Space Concept Plan. This sketch depicts areas thought to be of significance for both conservation and safety.

In 1972, the Environmental Resource Committee of the Southern California Academy of Sciences and members of the UCLA botany and zoology faculties prepared an environmental resources survey for the County. The survey identifies areas throughout the County that warrants special consideration, due to their high biological resource value. Eighty-one of these areas were identified on the vegetation and wildlife map in the 1973 Los Angeles County General Plan.

In 1976, 62 areas of biological significance were identified in the Los Angeles County Significant Ecological Areas Study. This study reevaluated the areas identified by the Environmental Resource Committee of the Southern California Academy of Sciences.

In 1980, 61 of these biologically significant areas were adopted as part of the Conservation and Open Space Element of the Los Angeles County General Plan. These SEAs were islands of significant habitats within larger undeveloped areas, which were thought to provide sensitive plants and animals ample open space and ensure their continued existence. Since 1980 however, many of these areas were impacted by rapid development activity within and around the SEAs. Because some of the "island" habitats were isolated from each other by development within the intervening areas, the opportunity for species movement and genetic dissemination was dramatically reduced. Therefore, the identification of island habitats, independent of the entire ecosystem, was ultimately deemed to be unsustainable.

Supplemental studies further assessing the biological resources within seven SEAs were conducted in 1991. These studies occurred in the Santa Monica Mountains, San Gabriel Canyon, Chino Hills, San Francisquito Canyon and Kentucky Springs Canyon. Each study determined that either the SEA boundaries adequately encompass the specific species identified in the SEA description or recommended the expansion of the boundaries to better encompass the resources.

In 2001, the Los Angeles County SEA Update Study 2000 was completed as part of the General Plan Update. Conservation planning was the fundamental goal of this update, which was designed to accomplish the following: evaluate existing SEAs for changes in biotic conditions and consider

additional areas for SEA status; delineate SEA boundaries based upon biotic evaluation; and propose guidelines for managing and conserving biological resources within SEAs. The SEA Update Study 2000 was based on scientifically grounded concepts regarding the size and type of linkage systems necessary to sustain the biologically diverse plant and animal species that are found within the County. The General Plan SEA Map depicts each area that has been designated as ecologically significant, taking into account its ecological systems, the area meets one or more of the SEA selection criteria.

In 2001, after the SEA Study Update was released, there was additional public input considered. After reviewing the public and resource agency letters and data, several areas were evaluated. Based on the SEA criteria, changes were proposed, including the addition of two new SEAs: Altadena SEA and Santa Felicia SEA.

Beginning in 2005, the proposed SEAs were reevaluated to refine boundaries, update the species data, and identify areas to be designated as Ecological Transition Areas (ETAs). ETAs are a subset of the SEA overlay; they depict areas where the natural vegetation has been degraded as a result of past or ongoing land use activities, but are functionally integral to the SEA.

In 2010, an expert panel of biologists, versed in the biological resources of the County, was convened to evaluate the SEA boundaries based on the SEA criteria, available scientific data, current biological theory, and field experience. Many of the panel's recommendations were incorporated into the SEA Program, which underwent a final evaluation 2011.

Conservation Planning

Increasingly, conservation plans have employed more fluid approaches to conserving the ever-increasing list of sensitive resources (e.g., endangered species, habitats of limited distribution, and "patchy" habitats such as coastal sage scrub). The previous SEA Study in 1976 applies a pragmatic interpretation of "island" bio-geographic theory to its SEA delineation rationale, the primary principles for determining SEA boundaries were that:

- Species extinction rates are lower on larger islands than smaller islands; and,
- Isolated habitat areas have less opportunity to regain species by re-colonization from other areas.

These principles have moved from theory to demonstrated fact during the intervening years, but even as the scientific community has come to understand that conserving intact biotic diversity requires providing very large, physically connected parcels, land use changes were dramatically reducing the natural open space remaining within the County. When England and Nelson, authors of the 1976 SEA Study, translated the early bio-geographic concepts into SEAs, for the 1980 General Plan, they did not foresee the rates of growth that have occurred within the County, and despite what seemed, at the time, to be an adequate application of the theory, they created SEAs that have over time proven to be either too small to conserve habitat biodiversity internally, and/or too distant to provide essential connectivity between them.

Recent studies of biological diversity have demonstrated that there are two essential components needed within land use plans to conserve native species and their habitats in an urbanizing environment: sufficient size (of the conservation or open space use area), and connectivity (with other like or supporting systems). Urban "islands" lose biological diversity at a fairly steady rate, commensurate with size (smaller habitat patches losing more, faster), and isolated habitat areas, regardless of size, have less opportunity to regain species by re-colonization from other areas. The distance between habitat areas, and land use within the intervening areas, also influence both the

rate of loss and the potential for gain.

Based on updated evaluation principles, the revised SEAs reflect a more modern and scientifically-grounded concept regarding size and connectivity. Rather than focus on a single resource or habitat type, existing SEAs are connected into a linkage system, which should greatly improve the maintenance of critical resources. The SEA designation does not protect biotic resources on land per se, and SEAs are not preserves or conservation areas; rather, SEAs are areas in which planning should be sensitive to resources and maintenance of biological functions as well. By creating larger SEAs, habitat linkage zones are provided between related habitat types (such as the Antelope Valley buttes, or the San Andreas Rift Zone wetlands), and areas of sufficient width, to function as wildlife movement routes between open space areas. The linkages may serve to sustain populational genetic diversity of low-mobility species (such as plants, amphibians, reptiles, rodents), as well as provide refuge areas for migrant species.

Corridor routes provide for dispersal between habitat areas by supporting more mobile species. The need for buffer areas has also been eliminated, with SEAs incorporating not only local resources (such as sensitive species) and their habitats, but also the seasonal support habitats for those species, with connections to essential sustaining resource areas (such as corridor areas and hydrological systems). Additionally, potential impacts of non-native species, feral pets, lights, noise, etc., on sensitive habitats have been alleviated by reducing the "edge effect" of urbanization relative to the overall size of the SEAs. In short, by "bridging the current SEA islands" wherever possible, zones of lower intensity human impacts between essential habitat resources have been provided, which help maintain overall species and habitat diversity in Los Angeles County.

Biotic Diversity

The preservation of biological diversity today, is even more important than it was when SEAs were first established; as is the need to preserve the function of whole ecosystems, evident in the conservation planning efforts underway around the world. Large natural open space areas can conserve entire habitats and ecosystems intact, preserving species diversity and ensuring that native species do not become extinct or endangered. Open space or rural areas, with low density development, must be of sufficient size to retain all the essential "pieces" of the system to function biologically over time. While absolute size parameters are not known for many systems, as a general rule, larger is better.

Until fairly recently, forestry practices traditionally focused upon the growing of trees, often arrayed in plantations, which emphasized space utilization rather than natural habitat values, and therefore lacked many animal species. Despite the massive use of fertilizers, herbicides and pesticides, these plantations rarely yield the quality or quantity of wood found in a native forest of similar tree composition. Ecological studies of forest ecosystems were undertaken, and in time it was demonstrated that most trees cannot efficiently extract nourishment directly from the soil, but rather are sustained biologically by a type of external fungi, which grow on their root systems and aid in the uptake of nutrients. The spores of these fungi are eaten, but not digested, by native mice, who then distribute them over the forest floor, ensuring their availability to seedling and sapling trees. The mouse population is held in balance by owls and other small predators, many of which in turn roost, shelter and nest in the trees.

This example and many others have demonstrated that long-term preservation of all ecosystem components, however unassuming in stature, is essential to the continued existence of our deserts, wetlands, forests, grasslands and other natural habitat areas.

It is logical to create SEAs that encompass biotic resources cumulatively representing the

biodiversity of the County. These areas must be designed to sustain themselves into the future, genetically and physically, even in the face of climate change. Therefore, the SEA designation focuses on maintaining biodiversity in the long-term by creating boundaries, which follow natural biological parameters, embrace habitats, linkages and corridors, and are of sufficient size to support sustainable populations of their component species.

Habitat Linkages and Wildlife Corridors

Habitat linkages connecting core areas of open space can mitigate the detrimental effects of shrinking habitat availability and wildlife population isolation. Typically, habitat in the SEAs consists of large contiguous blocks (core habitat areas) with intervening areas of open space containing non-native grassland, roads, rural residential development, and other low intensity disturbance. A primary goal of any land use within SEAs should be to maintain high levels of connectivity between core habitat areas via a network of linkages and corridors. Such linkages should make use of natural topographic features (ridge lines and drainages), vegetative cover (woodlands and scrub), water sources (streams, springs, and ponds), and road undercrossings (bridges and culverts).

- **Habitat linkages:** Areas that possess sufficient cover, food, water and other essential elements to serve as a movement pathway, or between two or more larger areas of habitat are referred to as “habitat linkages.” These linkages can be large or small depending on the species it serves. An example would be a belt of coastal sage scrub traversing a golf course, and connecting sage scrub habitat areas on either side, providing a “safe passage” zone for smaller, slower-moving species such as lizards and rodents to maintain population connectivity between the two sides of the golf course.
- **Wildlife corridors:** Areas of open space of sufficient width to permit larger, more mobile species (such as foxes, bobcats and coyote) to pass between larger areas of open space, or to disperse from one major open space region to another are referred to as “wildlife corridors.” Such areas generally are several hundred feet wide, unobstructed, and usually possess cover, food and water. The upland margins of a creek channel, open ridgelines, open valleys or the bottoms of drainages often serve as major corridors locally, as do riparian alignments. Corridors used by mountain lions are often over 1,000 feet wide, as mountain lions generally will not use corridors or choke points that are narrow.

Regional Connectivity

The Significant Ecological Areas play a critical role, in not only identifying Los Angeles County's biotic diversity, but in providing an opportunity to connect these areas with similar areas of biological importance in adjacent counties. The Puente Hills SEA identifies a regionally significant open space that connects the Puente Hills in Los Angeles County with the Chino Hills in Orange County, which is connected to the Santa Ana Mountains, and further south, the San Jacinto massif, in San Diego County. Similarly, the Santa Monica Mountains, Santa Susana-Semi Hills, Santa Clara River and Piru Creek SEAs all identify important connections to habitat in Ventura County. The San Andreas SEA identifies the regionally significant connection between the San Gabriel Mountains and the Tehachapi Mountains, which is also an area where the boundaries of three ecoregions are joined. The Antelope Valley SEA, identifies connections between the San Gabriel Mountains and the Mojave Desert, which provides movement opportunities along the drainages, such as Big Rock Creek, and into vast open areas in Kern and San Bernardino Counties. The SEA also identifies the southwestern portion of desert tortoise habitat, part of larger habitat area within San Bernardino and Kern Counties.

Antelope Valley SEA: The SEA extends from the National Forest to the playa lakes within Edwards

AFB, encompassing the whole of the two largest drainages exiting the northern slope of the San Gabriel Mountain range, and its geographical features serve as a major habitat linkage and movement corridor for all wildlife species within its vicinity. Ecologically “generalist” species (bobcat, coyote, mule deer, fox, raccoon, etc.) have the ability to move across such vast areas and through changing habitat types. For such species, the SEA may serve as an important system for long-term inter-populational genetic exchange. For smaller or less-mobile species, or taxa, which are more narrowly restricted in their habitat needs, the SEA can serve as a broad linkage zone, in which individual movement can take place during seasonal or populational dispersal. This provides essential genetic exchange within and between meta-populations. The two drainages, combined with the upland terrestrial desert-montane transect portion of the SEA, insure linkage values and direct movement zones for all of the wildlife species present within the Los Angeles County portion of the Antelope Valley.

Puente Hills SEA: Evidence of significant wildlife movement throughout the Puente Hills SEA has been documented in a two year carnivore study commissioned by the Santa Monica Mountains Conservancy as part of a multi-jurisdictional effort to establish a region wide wildlife movement linkage. This SEA represents the Los Angeles County portion of a continuous series of natural open space within the Puente Hills and Chino Hills. Overall, this open space extends north and west from State Route 91 (SR91) in Orange and Riverside Counties to the Whittier Narrows reach of the San Gabriel River. The Puente/Chino Hills are a natural, physical link between the Santa Ana Mountains and the San Gabriel River. The San Gabriel River flows from and links to the San Gabriel Mountains. By virtue of these linkages and a complex of interconnected habitat units throughout the Hills, the Puente/Chino Hills function as both an important wildlife linkage and resident habitat area for regional wildlife populations.

San Andreas SEA: The San Andreas SEA includes several important linkages for wildlife movement. The Fault Zone connects with the Santa Clara River drainage in the Lake Hughes area, linking with this large, free-flowing watershed that extends to the Pacific Ocean in Ventura County. The foothills and grassland in the westernmost tip of the SEA are part of an important linkage between the San Gabriel Mountains and the Tehachapi Mountains. This linkage to the Tehachapi Mountains is important because it connects the southernmost extent of the Sierra Nevada Mountains with the San Gabriel Mountains and with the southern Coast Ranges. The Tehachapi Mountains are the only mountain linkage between the Transverse Ranges and the Southern Coast Ranges to the Sierra Nevada Range. This largely natural area may be an important topographic reference for migrating birds and bats, as well as functioning for essential high elevation foraging grounds along their migration route. The Tehachapi Mountains further provide a valuable link for gene flow between divergent populations of many species, including plants. The SEA includes several large drainages that extend from the San Gabriel Mountains to the western end of the Mojave Desert: the Antelope Valley floor and the Fairmont and Antelope Buttes. These washes provide an important linkage for animals traveling between the mountains (all the ranges mentioned above) and the Mojave Desert. In addition, Amargosa Creek facilitates east-west wildlife movement through Liebre Mountain, Portal Ridge, and Ritter Ridge to Barrel Springs in the Antelope Valley near Palmdale. The frequency of valuable riparian communities along this travel route located within an otherwise arid climate, further indicates the importance of this area, which is one of the busiest natural wildlife linkages in the region.

Santa Clara River SEA: Historically (and prehistorically) the riparian corridor along the Santa Clara River has served as the primary east-west linkage between the Pacific coastline, coast ranges, interior ranges, high desert and southern Sierra (via the Tehachapi range). Animals moving through the Santa Clara River at one time had unobstructed passage along the river and within its tributaries. The present configuration of the tributary drainages has reduced connectivity from the Santa Clara Valley to the north, but the Santa Clara River remains relatively intact and open. The SEA embraces

the river corridor and the linkage zones considered essential to insuring connectivity and resource values within the historic movement zones for all of the wildlife species present within the Los Angeles County portion of the Santa Clara River.

Santa Felicia SEA: Historically riparian corridors have served as linkages between the Pacific coastline, Coast Ranges, interior ranges, the high desert and southern Sierras (via the Tehachapi range). The Santa Felicia stream corridor likely serves the functions today. The elevation in this area is lower than that of the Los Padres National Forest, to the north, which facilitates animal movement within the riparian systems between Piru Lake in Ventura County and the San Gabriel Mountain range in Los Angeles County. The tributary drainages for Santa Felicia Creek within this SEA remain intact and unobstructed.

Santa Monica Mountains SEA: Although wildlife movement is hampered by rural development in the SEA, animals are still able to move through the Santa Monica Mountains in many areas. Due to its large size and topographic complexity, many linkages are certain to occur within the SEA at various bottlenecks. These linkages allow movement between large open space areas within the SEA as well as between areas outside the SEA such as the Simi Hills and the western extent of the Santa Monica Mountains in Ventura County. The genetic flow through these areas is crucial in maintaining the diversity and viability of certain species within the Santa Monica Mountains. Open space linkages between Kanan Road and Calabasas Parkway along Highway 101, as indicated by the National Park Service, are of particular importance for continued wildlife movement, due to the lack of alternative routes and encroachment of development. Although there are significantly large open spaces within the SEA, contiguous habitat linkages between them are critical in reducing bottlenecks and providing for long term sustainability.

Santa Susana Mountains-Simi Hills SEA: The Santa Susana Mountains/Simi Hills SEA includes several important linkages for wildlife movement. The Simi Hills and Santa Susana Mountains provide a vast open space corridor to foster wildlife movement between the Santa Monica Mountains to the south, San Gabriel Mountains to the east, and Los Padres National Forest to the north. Dense, natural habitat associated with the majority of the study area provides excellent opportunities for concealment and water sources while the grasslands provide an abundance of prey.

SEA Descriptions

The following section provides detailed description of the County's SEAs.

Agua Amarga Canyon SEA

Agua Amarga Canyon is the last remaining relatively undisturbed drainage on the coastal side of the Palos Verdes Peninsula. The geographical location and geological history of the peninsula make the remaining habitat extremely valuable for ecological and scientific studies. The peninsula, which was an island in recent geological time, has close floral and faunal similarities to the Channel Islands. This feature makes the remaining natural habitat on the peninsula a natural research laboratory for the study of island bio-geography and evolutionary ecology.

The vegetation in Agua Amarga Canyon is a complex of coastal sage scrub, chaparral, and riparian communities. This association is very diverse, and supports a good complement of native species. Among these are at least three races of birds resident on the peninsula, which are found nowhere else except for the Channel Islands. These are the insular form of the orange-crowned warbler, western flycatcher, and Allen's hummingbird. The same phenomenon has been documented for plant species.

The Canyon is also exceedingly important as an area for migratory birds. The Palos Verdes Peninsula is a headland that juts into the Pacific Ocean several miles further than the surrounding coastline.

Migrating terrestrial and marine birds flying over the open ocean on their north-south migration along the Pacific Flyway, spot this headland and stop to rest and feed. Many of these birds will stay and spend the winter in the area.

Alamitos Bay SEA

This area is one of two remaining examples of salt marsh found in Los Angeles County, and the last remnant of the extensive salt marshes once found in Los Alamitos Bay. The majority of this vegetation type has been lost to urbanization, flood control projects, harbors, and marinas. It is one of the most productive types of ecological communities that exists and is extremely important as a breeding ground for both terrestrial and marine organisms, including the majority of commercial fish. This is due in part to the fact that estuaries and salt marshes are the interface between the terrestrial and marine worlds, and are important nutrient cycling centers for marine ecosystems. It is probable that the Belding's savannah sparrow occurs here. This species is restricted to salt marsh habitat, and has been placed on the State endangered species list. This type of habitat is also important as a wintering ground for migratory birds.

Altadena SEA

The Altadena Significant Ecological Area (SEA) is located along the Altadena foothills directly above the community of Altadena. A large portion of this SEA lies within the Angeles National Forest. The Arroyo Seco and Millard Canyon are located in the western portion of the SEA, and Hastings Canyon is located to the east. The potential for wildlife movement exists along this area, where the foothills afford year-round means for wildlife to travel in an east-west direction through terrain that is generally not as rugged or constrained by severe weather as that found at higher elevations. In addition, a second potential wildlife corridor exists between the Angeles National Forest and the Verdugo Mountains.

The wide range of elevation, topography, aspect, and geology represent a wide array of physical habitats within this SEA. In general, the topography of the SEA is moderately steep to very steep, resulting in a number of very narrow corridors with elevations ranging from a high of approximately 3,000 feet above mean sea level (MSL) along the northern boundary, to a low of approximately 1200 feet above MSL along the southern boundary. Consequently, a variety of plant communities exist, including riparian and upland shrublands and woodlands. Within these major community types, there are many vegetation series varying according to plant species dominance.

Of particular note for this SEA is its potential to accommodate lower elevation east-west linkages. This is significant in this area because of the constraints of development at lower elevations and very steep terrain and seasonal snow storms above the SEA, beginning at about 3000 feet, all of which limit potential movement for many species. There is also potential for north-south wildlife movement between the Angeles National Forest and the Verdugo Mountains. A link between the Angeles National Forest and the Arroyo Seco creates a potential movement corridor from the forest to the Interstate-210 freeway. After passing over and under the freeway, the linkage enters the San Rafael Hills where blocks of habitat remain, interspersed with residential development. From the San Rafael Hills, linkages may then be traced to the west across the Glendale Freeway and enclaves of residential development to access the Verdugo Mountains.

Vegetation

Sensitive plant species occurring or potentially occurring within the SEA are discussed below in the Sensitive Biological Resources section. Many of these species, although often different in their growth form, prefer similar habitat characteristics and are often found in recurring assemblages to form recognized plant communities.

Plant communities within the SEA were classified using standard methodology and terminology. Most of the communities correspond directly with those listed in Holland's Preliminary Descriptions of the Terrestrial Natural Communities of California (1986 and 1992 update). Other communities are named based on dominant species within them and/or commonly used terminology.

- Oak woodland: A plant community dominated by arborescent species of the genus *Quercus*. Within this SEA, oak woodland is dominated by coast live oak, which is interspersed with chaparral and coastal sage scrub communities. Understory and adjacent vegetation varies from annual grasses and forbs in level areas to shrubs where topography is steeper. Oak woodland is scattered throughout the SEA, but is most prevalent on north-facing slopes and in drainage bottoms.
- Oak riparian forest: This community is also dominated by coast live oak (canyon oak at higher elevations). The primary difference between oak woodland and oak riparian forest is the greater availability of water in riparian situations, which is expressed in a denser tree canopy and higher density of trees. There is also a greater abundance of hydrophytic (moisture favoring) plant species in the understory. Oak riparian forest is best developed within broader, low gradient drainages of this SEA.
- Chaparral: A shrub community composed of robust, mostly evergreen species. Within this SEA, a number of chaparral series are found according to their dominant plant species. These include chamise, buck brush, ceanothus, scrub oak, interior live oak and mosaics of these depending on mixes of species and elevation. These and other shrub species form dense vegetation five to ten feet in height. The development of chaparral is pronounced over hillside areas throughout the SEA.
- Coastal sage scrub: This plant community is dominated by California sagebrush, California encelia, white sage, black sage, and California buckwheat. It also forms dense stands that grow three to four feet in height. Within this SEA, this plant community is generally found in scattered patches, which are highly inter-digitated with mixed chaparral. These are primarily located in the lower elevation hillsides of the SEA.

Wildlife

Wildlife populations within the Altadena SEA are diverse due to the area's physiographic diversity and its location within and adjacent to the Angeles National Forest. The analysis of invertebrates is severely limited due to the lack of specific data; however, the SEA is likely to support healthy populations of a diverse assortment of invertebrate species based on its undisturbed nature and variety of habitats. Amphibians are expected to be present due to the aquatic and semi-aquatic habitats provided within the Arroyo Seco, Millard Canyon and their tributaries. Reptile abundance and diversity are expected to be characteristic of the habitats present, although areas closer to urban development along the southern boundaries of this SEA are likely to be degraded due to edge effects.

Bird use, diversity, and abundance within the Altadena SEA are expected to be high for several reasons. In general, this SEA provides habitat for a wide range of shrubland, woodland, and riparian species that occur at varying elevations. In particular, the riparian habitats found in drainages throughout this SEA provide essential habitat for riparian-obligate and riparian-favoring species. In addition, a number of migratory birds use this area to move across the northern portion of the Los Angeles Basin. These include a wide spectrum of birds including songbirds, waterfowl and raptors.

Similarly, the mammalian fauna is expected to be very diverse and abundant. Many mammalian

species, including wide ranging, large mammals such as mountain lion, bobcat, coyote and deer are expected to use the SEA to forage. These animals are likely to den within the more isolated areas within the National Forest; however they are known to roam the SEA.

- **Wildlife Movement:** Wildlife movement within the Altadena SEA takes on two major forms. First, due to the extreme intervening topography it is logical to expect considerable movement of wildlife up and down the drainages, which course through this SEA to connect the Angeles National Forest interior with foothill areas. Consequently, this type of movement occurs on a seasonal basis, particularly for large mobile mammals whose full range of habitat needs are typically met over broad areas.
- The second major type of movement occurs across the flanks of the foothills in an east-west direction. Particularly for riparian-favoring migratory birds, a corridor linking lower elevation riparian habitats in the Altadena SEA is of high importance and is heavily utilized.

Sensitive Biological Resources

Sensitive biological resources are habitats or individual species that have been given special recognition by federal, state, or local conservation agencies and organizations as endangered, threatened, rare, or otherwise sensitive; this is principally due to species' declining or limited distribution or population sizes, usually resulting from habitat loss. Watch lists of such resources are maintained by the California Department of Fish and Game (CDFG), the United States Fish and Wildlife Service (USFWS), and recognized authorities such as the California Native Plant Society (CNPS). The following sections indicate the habitats as well as plant and animal species present, or potentially present, within the Altadena SEA that have been afforded special recognition.

- **Sensitive Plant Communities/Habitats:** This report/description supports several habitat types considered sensitive by resource agencies, namely the CDFG [California Natural Diversity Database (CNDDDB)], because of their scarcity and their being habitat for a number of state and federally listed endangered, threatened, and rare vascular plants, as well as several sensitive bird and reptile species. These communities include: oak riparian woodland and coastal sage scrub. These communities, or closely related designations, are considered highest-inventory priority communities by the CDFG, indicating that they are experiencing a decline throughout their range.
- **Sensitive Species:** Sensitive species include those listed, or candidates for listing by the USFWS, CDFG, and CNPS. These species include, but are not limited to, Nevin's barberry, California gnatcatcher, arroyo southwestern toad, and red-legged frog. In addition, the SEA identifies other species observed, recorded in the CNDDDB, or reported in previous documentation as observed within or in the immediate vicinity of the SEA.

Antelope Valley SEA

The Antelope Valley Significant Ecological Area (SEA) is located within the central portion of the Antelope Valley, primarily east of the cities of Palmdale and Lancaster, within a predominantly unincorporated area of Los Angeles County. The area includes the tributary creeks to Little Rock and Big Rock Creeks (partially within U.S. Forest Service land) downstream to the valley floor and northward across the historic floodplain zones to Rosamond, Buckhorn, and Rogers dry lakes on the Los Angeles/Kern County border. Delineation of the SEA boundary considered the importance of the Little Rock and Big Rock Creek watershed to the surface and subsurface hydrology of the Antelope Valley and interrelated dry lakes and wetland systems.

The desert-montane transect segment of the Antelope Valley SEA extends from the National Forest boundary above Piñon Hills northward across the valley floor to the aqueduct, and on the north side of the aqueduct to Black Butte, and then across approximately seven miles of open scrub formations to the southeastern slopes of Saddleback Butte. Most of the land within this segment is open and undeveloped, primarily vegetated with desert scrub and Joshua tree woodland formations. It provides a terrestrial linkage, rather significantly obstructed by the aqueduct, toward the northeastern portion of the main segment of the SEA.

The SEA supports many regional biological values. These values include: the watershed and upper tributary streams containing riparian woodlands, marshes and playa lakes; the upper portions of the two creeks have year-round water, providing breeding sites for amphibians, and permanent water resources for wildlife species along the north face of the San Gabriel range; open ponds and seasonal playa lakes providing essential foraging and wintering sites for migrating birds otherwise not found in the Mojave Desert; nesting sites exist for numerous sensitive bird species, including the federally threatened western snowy plover; the buttes and their sand sheet habitats representing unique habitats in the otherwise level desert floodplain, providing nesting, roosting, denning, and refuge sites, and perches for birds of prey; the desert riparian corridor providing shelter and open passage for mobile species moving within and between habitats along the gradient; desert riparian woodlands offering roosting and nesting opportunities for raptors and migratory songbirds; the ponds, seasonal playa lakes and dry lakes attracting huge numbers of migrating birds and supporting breeding populations of wading birds, shorebirds, and waterfowl; the portion of Little Rock Creek above Little Rock Reservoir is the only known Antelope Valley breeding locality for the endangered southwestern arroyo toad; and, the drainages providing the primary subterranean hydrological recharge for this portion of the Antelope Valley aquifer.

The SEA was delineated to emphasize the importance of the Little Rock and Big Rock Creek watershed to the surface and subsurface hydrology of the Antelope Valley and to the dry lakes. The western portion of the SEA extends along the margin of Little Rock Creek wash and floodplain zone, while the eastern margin follows Big Rock Creek wash, includes the lower slope limits of several major buttes and the direct watershed basin for Rogers Dry Lake. The north-eastern portion of the SEA encompasses some agricultural cropland (some of which lies fallow) and dispersed rural residential, but the underlying hydrology of the washes remain intact through the entire SEA area.

The southernmost portions of the three "legs" of the SEA lie within the Angeles National Forest, and include the upper tributary watersheds for Big Rock Creek. These areas support the mixed conifer, multi-species oak formations common to the middle-elevation zones on the north face of the San Gabriel Mountain range. The creeks themselves are higher energy systems at those elevations, as they collect water from the surrounding terrain, and typically are lined with woodland formations of alder, willow, sycamore and cottonwood, at varying density and species composition. As the creeks drop down behind (north) the pressure ridges of the San Andreas fault zone they lose gradient and widen, with the vegetation becoming more sparse and less evenly distributed along the channel margins. Where the alluvial plains are wide and shallow, cottonwood-willow woodland and sycamore woodland formations often occur within the overall floodplain, on stable terraces or around oxbow flow zones.

North of the fault zone the creeks gradually widen and most of the flow is beneath the surface, except during high energy storms or in spring (depending upon rainfall totals in the watersheds). Little Rock Creek is impounded by Little Rock Dam, then flows into a rocky stretch of desert scrub habitat, with sycamore and willow forming thin formations in the higher energy reaches, and dense stands of cottonwood on terraces where the alluvial plain widens. Where washes from both creeks cross the lowlands of the Antelope Valley, their channels support a variety of desert scrub formations within the alluvial plains. Overstory formations of cottonwood occur sporadically along the

alignments, in places where the groundwater table is replaced or augmented by agricultural runoff. The surrounding upland formations are primarily desert scrubs, including creosote and chenopod scrubs, sand sheets (mostly around the buttes), and Joshua tree woodland. Intact Joshua tree woodland, with native substrates present, supports a relatively high diversity of annual wildflowers, reptiles and mammals. The Joshua trees also provide nest sites for many desert and migratory bird species.

Lovejoy, Alpine, Piute, Black and Saddleback Buttes, along with other, smaller unnamed buttes, form most of the topographical relief within the SEA. These areas offer different ecological conditions associated with rock shelter, perching sites, nesting sites, denning areas, wind protection and sand sheet accumulation areas. Local and migratory bat species roost and reproduce in the caves and crevices of the butte formations. The higher buttes provide the only local nesting sites for owls and other birds of prey.

The open agricultural lands, active or fallow, support a diversity of wildlife species, which essentially regard the fields and ditches as irrigated desert. Birds of prey frequently hunt over the open agricultural areas, including fallow fields; wide-ranging predators also find excellent hunting conditions in and around agricultural areas. A spectrum of local and migratory bat species feed aerially over the irrigated fields in spring and summer, when insect numbers are highest, and at least one sensitive bat species, the pallid bat, forages terrestrially in open scrub or ruderal desert habitats.

The northern portion of the SEA contains several unique habitat types, including mesquite bosque (threatened locally by lowering water tables), clay pan pools, vernal pools, alkali grasslands, alkali and freshwater marshes, and permanent ponds. Hundreds of bird species have been recorded from the pond and marsh habitats around the dry lakes, and numerous species nest on the playa margins or in the associated riparian habitats. The open creosote scrub and other xeric formations on the slopes surrounding the lake playas serve as important wintering areas for many raptor species, as well as large numbers of songbirds.

Vegetation

The SEA traverses the Antelope Valley from the San Gabriel Mountain foothills to the low elevations of the dry lake basins, and its expanse and considerable topographical relief is reflected in its relatively high floral and faunal diversity. The SEA includes playa lake, alkali marsh, alluvial fan scrub, a mosaic of xeric desert scrubs, Joshua tree woodland, desert riparian woodlands, juniper scrub, pinyon pine, chaparral and higher elevation mixed conifer, oak, and riparian communities. Transitional zones (ecotones) between these communities often contain unusual species compositions such as pinyon pine, juniper and Joshua trees together, or Joshua trees adjacent to cottonwood forest.

Plant communities within the SEA were classified using standard methodology and terminology. Most of the communities discussed correspond directly with those listed in Holland's Preliminary Descriptions of the Terrestrial Natural Communities of California (1986 and 1992 update); some communities are named based upon the dominant species within their boundaries and/or other commonly used terminology.

- Desert scrub: A comprehensive term for a number of relatively low-stature, widely-spaced formations of shrubs and sub-shrubs, commonly occurring on open, sandy soils where groundwater is inaccessible to all but a few deep-rooted species. Dominants include Great Basin sagebrush, antelope bush, creosote bush, several species of *Atriplex* (saltbush), rabbitbrush, cheesebush, sages, winterfat, and burrobrush, often with one or more perennial grasses, needlegrasses, sand drop-seed) interspersed. Formations dominated by saltbushes

and other related taxa, which may be particularly common on alkaline soils, are sometimes called chenopod scrubs, in reference to the family *Chenopodiaceae*, which include most of the dominant species. Within the SEA, variations on this community often inter-grade with, or form understory within, juniper woodland and Joshua tree woodland. Variations are also found on lower slopes, around the buttes and on the adjacent valley floor. These formations also occur extensively within the desert-montane transect segment of the SEA.

- Chaparral: Consists of broad-leafed or needle-leafed, sclerophyllous (hard-leafed), medium height to tall shrubs that form a dense cover on steep slopes, usually below 5,000 feet in Southern California. Dominant species found within this community include scrub oaks (several species), chamise, manzanita, wild lilac, toyon, and western mountain-mahogany. This plant community occupies internal slopes, particularly on north-facing exposures, within the higher elevations of the SEA; shrubs are frequently interspersed as understory formations within oak and conifer woodlands.
- Grasslands: Consist of low, herbaceous vegetation that are dominated by grasses. This community also harbors native forbs and bulbs as well as naturalized annual forbs. Only fragmentary representatives of native grasslands exist within the SEA, mostly sand drop-seed colonies on relatively less-disturbed sandy substrates around the buttes. Non-native grassland consists of dominant invasive annual grasses that are primarily of Mediterranean origin. Dominant species within this “community,” which is a ruderal formation and not a true habitat or community, include oats, bromes, foxtail chess and other grasses, wild mustards and other disturbance-favored “weedy” taxa. Non-native grasslands and other ruderal formations occur in small patches throughout the SEA and over much of the land left fallow from agriculture.
- Southern willow scrub: A riparian community consisting of dense, broad-leafed, winter-deciduous riparian thickets occurring within and adjacent to seasonal or permanent water courses. The “scrub” formation generally is sub-mature, which is a state that is often maintained by frequent heavy overflooding, and may attain woodland or forest stature if undisturbed for several decades. Dominant species of this community within the SEA are mulefat, sandbar and arroyo willow. Within the SEA this community primarily occurs along portions of the tributary drainages to Little Rock and Big Rock Creeks, but elements of it also may occur around the periphery of ponds and marshes.
- Joshua tree woodland: An open formation dominated by Joshua tree, which usually is the only arborescent species, and with numerous smaller shrub species interspersed. Shrub species commonly associated with Joshua tree woodland habitat include creosote bush, Great Basin sagebrush, California buckwheat, saltbush, horsebrush, desert almond, and antelope bush. Joshua tree woodland is present in varying densities and age formations over much of the less-disturbed uplands around the two primary washes, and throughout the desert-montane transect.
- Juniper woodland: An open formation dominated by California juniper, often with an understory of desert scrub species, sometimes mixed with chaparral at middle elevations. This community is found on lower slopes in the San Andreas fault zone portion of the SEA, in places mixed with Joshua tree woodland and chaparral.
- Mixed conifer-oak woodland: Formations typically have an overstory of oaks (canyon, interior live) intermixed with bigcone spruce, incense cedar, and yellow pine, of varying densities and compositions depending upon slope orientation, substrates, and fire history. Understory vegetation usually is dominated by chaparral species such as scrub oak, manzanita, and wild lilac. This community occurs only in canyons in the higher elevations of the SEA.

- Southern cottonwood-willow riparian forest: A broad-leafed winter-deciduous habitat dominated by Fremont cottonwood, in places mixed with willow or western sycamore. Southern cottonwood-willow riparian forest (or woodland) occurs within the SEA along segments of Little Rock and Big Rock Creeks, and lines of trees around the periphery of irrigated sites, lakes and ponds.
- Mesquite bosque: Consists of dense thickets of mesquite trees, usually found where groundwater resources are sufficient in quantity and depth to support the trees. There are remnant patches of this habitat throughout the northern portion of the SEA, but most of the trees have declined or died as water tables have been drawn down. Several large, healthy stands of this habitat persist around the southern perimeter of the dry lakes.
- Freshwater marsh: Develops in areas of still or slow-moving permanent freshwater. This community is dominated by the perennial, emergent cattail, which may reach heights of seven feet and grow in such densities as to form a closed canopy. Bulrush may also occur or be dominant within freshwater marsh. This formation occurs only in scattered ponds and irrigation ditches through most of the SEA, but does form large, natural habitat areas at Piute Ponds and other pond sites around the dry lakes.
- Alkali marsh: Similar to the freshwater marsh described above but with more salt-tolerant plant species present. Species associated with this community include cattail, saltgrass, and common reed. Alkali marsh occurs in small segments along Amargosa Creek and other wetland areas scattered along the San Andreas Rift Zone.
- Alluvial wash and alluvial fan sage scrub: Sometimes also known as floodplain sage scrub, generally consist of a mixture of shrubs, which colonize and persist within infrequently scoured and flooded terrain such as floodplains, alluvial plains, or along seasonal streams. The dominant shrub in most washes is scalebroom, but Great Basin sage brush, rabbitbrush, sweetbush, and chaparral yucca also may occur in the habitat type. This vegetation type is common throughout the alluvial plains and washes in the SEA.
- Disturbed or barren areas: Either completely lack vegetation or are dominated by ruderal species. Ruderal vegetation typically found within the SEA includes non-native grasses and “weedy” herbaceous species, native and non-native, including doveweed, mustards, telegraph weed, Russian thistle, dock, yellow star thistle, Australian saltbush, and cocklebur. Disturbed areas occur throughout the SEA on fallow agricultural sites, around active agriculture and residential developments, along paved roads, fire breaks, dirt access roads, trails, and other similarly disturbed areas.

Wildlife

Wildlife within the SEA is moderately diverse and abundant, commensurate with the extensive acreage of natural open space and the relative diversity of habitat types. While a few wildlife species are entirely dependent upon a single vegetative community, the entire mosaic vegetation communities within the area and adjoining areas constitutes a continuum of functional ecosystems supporting a wider variety of wildlife species, both within the SEA boundaries and as a part of the regional ecosystem.

Analysis of invertebrates on any given site generally is limited by a lack of specific data; however, the size of the SEA and diversity of habitats present is considered sufficient to encompass healthy populations of a large number of invertebrate species, in excess of 1,000 terrestrial species. The wetlands and aquatic habitats within the SEA support diverse faunas of freshwater and alkaline pool

arthropods, including native fairy shrimp, brine flies, and tiger beetles. Insect orders are particularly well-represented taxonomically, with moderate levels of species endemism including, *Coleoptera*, *Diptera*, *Hymenoptera* and nocturnal *Lepidoptera*.

Amphibians generally are not present within desert habitats except where surface hydrology persists throughout the year or breeding season; consequently, a limited number of species may be abundant in desert riparian areas. The moister woodland areas and canyon bottoms of the montane portions of the SEA support abundant populations of more common amphibians, and in Little Rock Creek, the southwestern arroyo toad. Several species of salamander also may be present within the mesic upper reaches of the creek drainages. Open desert scrub habitats generally support diverse reptile populations, and the overall herpetofauna of the SEA would include numerous lizard and snake species, along with southwestern pond turtle and California desert tortoise.

Bird diversity within the SEA is related to habitat opportunities for year-round residents, seasonal residents, and migrating raptors and song birds. Open xeric scrub hosts a suite of birds typical of such sites over a wide range of deserts, while the transition zones in the southern portion of the SEA would attract species with desert and montane habitat preferences. The most productive sites for birds are the riparian corridors and freshwater systems, which attract large numbers of migrants during spring and fall, and provide abundant cover and food resources for songbird breeding use. The desert riparian woodlands and rocky buttes provide nest sites for raptors, many of which forage widely over desert scrub and agricultural lands. The playa lakes and seasonal pools, along with the ponds near the dry lakes, attract large numbers of migrating shorebirds, waders and waterfowl, and provide important winter foraging and sheltering areas for waterfowl and birds of prey.

- **Wildlife Movement:** The SEA extends from the National Forest to the playa lakes within Edwards AFB, encompassing the whole of the two largest drainages exiting the northern slope of the San Gabriel Mountain range, and its geographical features serve as a major habitat linkage and movement corridor for all wildlife species within its vicinity. Ecologically “generalist” species (mountain lion, black bear, bobcat, coyote, mule deer, gray fox, raccoon, etc.) have the ability to move across such vast areas and through changing habitat types. For such species, the SEA may serve as an important system for long-term inter-population genetic exchange. For smaller or less-mobile species, or taxa, which are more narrowly restricted in their habitat needs, the SEA can serve as a broad linkage zone, in which individual movement can take place during seasonal or population dispersal. This provides essential genetic exchange within and between metapopulations. The two drainages, combined with the upland terrestrial desert-montane transect portion of the SEA, insure linkage values and direct movement zones for all of the wildlife species present within the Los Angeles County portion of the Antelope Valley.

Sensitive Biological Resources

Sensitive biological resources are habitats or individual species that are designated by federal, state, or local conservation agencies and organizations as endangered, threatened, or rare. This is due to the species’ declining or limited distribution or population sizes, usually resulting from habitat loss. Watch lists of such resources are maintained by the California Department of Fish and Game (CDFG), the United States Fish and Wildlife Service (USFWS), and special groups such as the California Native Plant Society (CNPS). The following indicates the habitat as well as plant and animal species known to exist, or potentially present within the SEA, that have been afforded special recognition.

- **Sensitive Plant Communities/Habitats:** This report/description supports several habitat types considered sensitive by resource agencies, namely the CDFG [California Natural Diversity

Data Base (CNDDDB), 2000], because of their scarcity and support of a number of state and federally listed endangered, threatened, and rare vascular plants, as well as sensitive bird and reptile species. These communities include Joshua tree woodland, southern cottonwood-willow riparian forest, fresh-water marsh, alkali marsh, alluvial fan sage scrub, mesquite bosque, and southern willow scrub. These communities or closely related designations are considered highest-inventory priority communities by the CDFG, indicating that they are declining in acreage throughout their range due to land use changes.

- Sensitive Species: Sensitive species include those listed, or candidates for listing by the USFWS, CDFG, and CNPS. These species include, but are not limited to, bank swallow, black tern, burrowing owl, white-faced ibis, willow flycatcher, loggerhead shrike, tri-colored blackbird, Townsend's big-eared bat, spotted bat, fringed myotis, long-ledded myotis, Mojave ground squirrel, and San Joaquin pocket mouse. In addition, the SEA includes locations of species observed, recorded in the CNDDDB, or reported in previous documentation as observed within or in the immediate vicinity of the SEA.

Ballona Creek SEA

Ballona Creek is one of two remaining remnants of salt marsh between Ventura County and the Los Angeles-Orange County line. This type of habitat is one of the most productive in the world, and is used as a breeding ground by many marine and terrestrial organisms. Belding's savannah sparrow, a state recognized endangered species, occurs in the pickleweed flats on the south side of the creek. The California least tern breeds in the sandy areas around Ballona Lagoon, and is recognized as an endangered species by the state and federal governments.

The salt marsh, Ballona Creek Channel, Ballona Lagoon, and Del Rey Lagoon form an important complex of habitats that are heavily used by migratory birds. The area is recognized by ornithologists and bird watchers throughout the area for its rich birdlife during the spring and fall migrations, and during the winter season. This type of heavy use is common in salt marsh habitat, but has been artificially increased here by the loss of habitat in Marina Del Rey, and throughout most of Southern California. This forces these birds to concentrate in the few remaining areas. Loss of this habitat type has led to reductions in the numbers of these birds present along our coast.

The salt marsh and lagoon at Ballona Creek are heavily used by academic institutions and conservation groups for educational field trips. This area serves as a type specimen of salt marsh habitat, and is the only accessible example in Los Angeles County.

Cruzan Mesa Vernal Pools SEA

The Cruzan Mesa Vernal Pools Significant Ecological Area (SEA) lies in the southeastern end of the Liebre Mountains, north of the Santa Clara River, and southeast of Bouquet Canyon. The SEA boundaries encompass the watershed and drainages of the Cruzan Mesa and Plum Canyon vernal pools, considered as a single ecosystem within the SEA. The SEA is located within an unincorporated portion of Los Angeles County and lies entirely within the United States Geological Survey (USGS) California Mint Canyon Quadrangle.

The Cruzan Mesa Vernal Pools SEA includes mesas, canyons and interior slopes, with Plum Canyon creek running east-west through the southern portion of the overall SEA. The extent of the SEA encompasses the watershed supporting both of these regionally unique vernal pools, including the immediate watershed surrounding both systems and the corridor in between. Plum Canyon forms the major drainage running east-west through the southern portion of the SEA, draining west toward Bouquet Canyon. Uplands within the SEA are comprised of slopes and canyons supporting

coastal sage scrub or scrub-chaparral vegetation. The Cruzan Mesa vernal pool complex lies within an elevated, topographically enclosed basin atop an eroded foothill between Mint and Bouquet canyons. The Plum Canyon vernal pool, situated in a landslide depression on a hillside terrace, is smaller than the Cruzan Mesa pools, but possesses the same essential vernal pool characteristics as the larger system, and the two areas together form an ecologically functional unit.

The seasonally wet vernal pools and surrounding open coastal sage scrub and chaparral slopes support a wide variety of migrant and resident birds and other native sage scrub vertebrate species. The steep cliffs that surround Cruzan Mesa, especially along the southeast and north margins, provide protected sites for perching, roosting and nesting by a variety of birds of prey. The SEA supports several regional biological values. These values include: sensitive plant species unique to seasonal pools on heavy clay soils, several of which are at the northernmost point in their overall ranges; seasonal surface water, providing breeding sites for sensitive amphibians, including western spadefoot and Riverside fairy shrimp; vernal pools, found nowhere else in Los Angeles County, and their coastal sage scrub watershed serving as a hydrological filter; seasonal ponds and surrounding mesic vegetation providing essential foraging and wintering sites for migrating birds otherwise uncommon in the southern Liebre Mountains; steep cliffs surrounding the mesa tops and their crevices and cavities providing roosting and nesting sites in the otherwise brush-covered hillsides. These pools are also the only three or four such pools in this portion of Southern California. The sensitive resources they support are unique locally and regionally, and biologists consider these to be among most sensitive habitat types in Southern California.

Vegetation

The SEA encompasses formations of coastal sage scrub, vernal pool and non-native grassland. The vernal pool margins support limited densities of native grasses, but these do not form separate communities and are included within the vernal pool floral matrix. Sensitive plant species occurring or potentially occurring within the SEA are discussed below in the Sensitive Biological Resources section.

Plant communities within the SEA were classified using standard methodology and terminology. The communities discussed correspond directly with those listed in Holland's Preliminary Descriptions of the Terrestrial Natural Communities of California (1986 and 1992 update). Descriptions and general locations of the each plant community present within the SEA are given below.

- Vernal pool: Sites occur in the SEA within the southern end of the Cruzan Mesa basin and on a landslide terrace on the northern slope of upper Plum Canyon, about one and one-half aerial miles southwest of the Cruzan Mesa pool system. True vernal pools, which are rare in Southern California and extremely rare in Los Angeles County, form seasonally in shallow, closed basins, usually where a lens of heavy clay soil holds surface water following rainfall events. Agency-listed sensitive plant species occurring within both of the SEA pool systems include California Orcutt grass and spreading navarretia, along with other vernal pool endemics such as hairgrass, woolly-marbles, waterwort, *Mimulus latidens* and water-starwort.
- Coastal sage scrub: Occurs throughout the slopes and ridges of most of the SEA, in places intermixed with chaparral elements. To some extent, the mosaic of coastal sage and chaparral reflects the fire history of any given portion of the site, with scrub formations generally occurring on sites that have more recently burned. However, some slopes within upper Plum and Mint canyons, where no fires have occurred for over 30 years, still support "pure" coastal sage scrub, suggesting that the formation is a climax community on those sites. Dominant species on most slopes within the SEA are California sagebrush, woolly blue-curls, chaparral yucca, black sage, Acton encelia, white sage, and chamise. A variety of less dominant

associated species are also present, including lance-leaved live-forever, common tarplant, California buckwheat, beavertail cactus, Turkish rugging, and Peirson's morning-glory. Disced or cleared areas have regrown with a dense cover of oats and bromes, California poppy, fiddleneck, several species of lupines, popcorn flower, comb-bur and other disturbance-favored native annuals. Less-frequently disturbed portions of the upper watershed basin support dense stands of chamise – California scrub oak chaparral, with yerba santa abundant along dirt roads and other disturbed areas. In the lower portions of canyons and along Plum Canyon creek, where ground-water levels permit, giant rye grass, Mexican elderberry, acourtia, redberry, toyon, holly-leaved cherry, Fremont cottonwood, western sycamore, and arroyo willow occur.

- Non-native grassland: Generally consists of invasive annual grasses, which are primarily of Mediterranean origin, and which have become the dominant ground cover formation on disturbed sites throughout the western states. Common species within this “community,” which is a ruderal formation and not a true habitat or community, include oats, bromes, foxtail chess, and other grasses, along with wild mustards, yellow star thistle, wire lettuce, sow thistle, milk thistle, and other disturbance-favored “weedy” taxa. Non-native ruderal formations occur over most of the Mesa around the vernal pools, where coastal sage scrub has been disturbed or removed, in small strips and patches throughout the SEA primarily along disturbed dirt road edges and where grading or other substrate disturbances have not regrown to native species.
- Mainland cherry forest: Is not well described but is typically composed of tall stands of hollyleaf cherry on rocky, dry slopes. Within the SEA, this community is not well developed and intermingles with chaparral. It can be found in a single narrow patch on a slope in the southwest portion of the SEA.

Wildlife

Wildlife diversity and abundance within the SEA are moderate, commensurate with the relative homogeneity of the natural open space habitat types. A number of local wildlife species are more-or-less dependent upon coastal sage scrub or scrub-chaparral formations, while other species are strictly limited to seasonal pool habitats. The two vernal pool systems in the SEA, along with the coastal sage scrub-chaparral uplands surrounding and connecting them constitutes a single, integrated functional ecosystem for wildlife species, both within the SEA boundaries and as a part of the larger regional scrub-chaparral ecosystem.

Analysis of invertebrates on any particular site usually is limited by a lack of specific data, but the fact that the SEA contains only two primary natural habitat types insures that there is sufficient acreage to support healthy populations of whatever invertebrate species are present, probably several hundred terrestrial species. The vernal pools, when ponded, form aquatic habitats for a moderately diverse fauna of freshwater arthropods and other invertebrates, including native fairy shrimp, aquatic flies, diving beetles, water scavengers, ostracods, and snails. The only insect order presently known to have a vernal pool endemic within the SEA is Coleoptera, with one vernal pool ground beetle species thus far having been found.

Amphibians generally are relatively common in coastal sage scrub habitats with persistent surface hydrology during the breeding season, and the SEA supports abundant populations of Pacific chorus frog, western toad, and western spadefoot toad. At least two species of salamander also may be present within more mesic portions of the surrounding canyons and chaparral.

Reptile populations in the SEA would include numerous lizard species, including San Diego banded gecko, yucca night lizard, side-blotched lizard, western fence lizard, western skink, San Diego

alligator lizard, coastal western whiptail, San Diego horned lizard, and silvery legless lizard. A robust snake fauna also would be expected within the SEA, including western blind snake, coachwhip (“red racer”), chaparral whipsnake, coastal patch-nosed snake, California rosy boa, San Diego gopher snake, California kingsnake, California mountain kingsnake, night snake, and southern Pacific rattlesnake.

Bird diversity within the SEA is related to habitat opportunities for year-round residents, seasonal residents, migrating raptors and song birds. Open coastal sage scrub hosts a suite of birds typical of such sites at lower elevations over most of the coastal slopes of Southern California. The most productive sites for resident coastal sage scrub and chaparral birds are around riparian and freshwater systems, which also attract large numbers of migrants during spring and fall. The vernal pools attract moderate numbers of migrating waders and waterfowl, and provide important winter foraging areas for resident and migratory birds of prey. Coastal sage and chaparral birds resident or breeding within the SEA include ashy rufous-crowned sparrow, Bell’s sparrow, black-chinned sparrow, lark sparrow, California thrasher, spotted towhee, California towhee, phainopepla, northern mockingbird, lazuli bunting, and several species of hummingbird, with additional species (western meadowlark, California horned lark, and perhaps also savannah and grasshopper sparrows) nesting and foraging in the grassland and ruderal habitats surrounding the vernal pools. Birds of prey observed around the vernal pools include red-tailed hawk, northern harrier, white-tailed kite, prairie falcon, and golden eagle. Barn owl, great horned owl, and common raven all nest in the cliffs surrounding Cruzan Mesa.

- **Wildlife Movement:** The vernal pools situated within this SEA serve as isolated, high resource quality habitat linkage sites for migratory waterfowl. The vernal pools teem with arthropod and amphibian activity, and so provide essential feeding grounds for long-distance migrants, as well as for resident species of reptiles, birds and mammals. The ponds do not lie within any identified terrestrial movement routes for wildlife, but may serve as important seasonal watering sites for species moving through and across the Plum Canyon divide between Mint and Bouquet canyons. The Plum Canyon stream channel undoubtedly serves as a movement pathway for more mobile species of terrestrial mammals, but it no longer links any larger habitat areas directly, due to land conversion in Mint and Bouquet Canyon.

Sensitive Biological Resources

Sensitive biological resources are habitats or individual species that have been accorded special recognition by federal, state, or local conservation agencies and organizations as endangered, threatened, rare, or otherwise of concern, principally due to the species’ declining or limited distribution or population sizes, usually resulting from habitat loss. Watch lists of such resources are maintained by the California Department of Fish and Game (CDFG), the United States Fish and Wildlife Service (USFWS), and special groups such as the California Native Plant Society (CNPS). The following indicates the habitats as well as plant and animal species present, or potentially present within the SEA, that have been afforded special recognition.

- **Sensitive Plant Communities/Habitats:** This description supports several habitat types considered sensitive by resource agencies, namely the CDFG [California Natural Diversity Data Base (CNDDDB)], because of their scarcity and support of a number of state and federally listed endangered, threatened, and rare vascular plants, as well as sensitive bird and reptile species. These communities include coastal sage scrub, mainland cherry forest, and vernal pool. These communities or closely related designations are considered highest-inventory priority communities by the CDFG, indicating that they are declining in acreage throughout their range due to land use changes.

- Sensitive Species: Sensitive species include those listed, or candidates for listing by the USFWS, CDFG, and CNPS. These sensitive species include, but are not limited to, spreading navarretia, California Orcutt grass, Vernal pool fairy shrimp, San Diego fairy shrimp, Riverside fairy shrimp, golden eagle, California gnatcatcher, San Diego black-tailed jackrabbit, San Diego desert woodrat, and southern grasshopper mouse. In addition, the SEA identifies species observed, recorded in the CNDDDB, or reported in previous documentation as observed within or in the immediate vicinity of the SEA.

East San Gabriel Valley SEA

The East San Gabriel Valley SEA is located in the easternmost portion of the San Gabriel Valley. For the purpose of delineating an area-wide ecological unit with interacting component habitat areas, this SEA includes incorporated as well as unincorporated lands. The area represents several ridgelines and hilltops and a major drainage at the eastern end of the San Jose Hills, which have been surrounded by urban development over the past four decades. The largest component of this SEA is Frank G. Bonelli Regional County Park (Bonelli Park) and a portion of Walnut Creek Park, both of which are unincorporated. Other component parts are South Hills Park and surrounding undeveloped land in the City of Glendora, Buzzard Peak and undeveloped hillsides to the southwest within the cities of West Covina and Walnut, undeveloped slopes to the west of Bonelli Park and Interstate 210 (I-210) in the City of San Dimas, and Elephant Hill and an adjoining ridgeline in the City of Pomona.

The East San Gabriel Valley SEA is comprised of five component parts. The location and configuration of this SEA and its parts are primarily defined by the urbanization of the eastern San Gabriel Valley which has occurred over the more developable valley floor and lower slopes of the San Jose Hills. As a consequence, the SEA resembles an "archipelago" encompassing portions, or islands, of undeveloped ridgelines, hilltops and drainages between the San Gabriel Mountains to the north and the Puente Hills to the south.

Generally, the topography within this SEA consists of moderate to steep hillsides with north, south, east and west slope aspects. Ridgelines vary in width from narrow to broad with well defined drainages in between. One major drainage, Walnut Creek, and a man-made reservoir, Puddingstone Reservoir, are found within this SEA. Elevations range from a low of approximately 560 feet above Mean Sea Level (MSL) in the Walnut Creek drainage to a high of approximately 1,375 feet above MSL at Buzzard Peak.

The biological communities found in this SEA vary according to physical habitat conditions (i.e., slope exposure, soil type and depth, and the availability of water) and the area's history of grazing practices. Elevation plays almost no role in defining habitat types. Many slopes support oak and walnut woodland, which often intergrade with prevalent stands of mixed chaparral. Coastal sage scrub is also found on slopes with shallower, drier soils. Drainages are typically vegetated with oak riparian woodlands and forests, with stands of western sycamore and willow woodland. More moderate slopes and broader ridgelines have been subjected to livestock grazing. In these areas, the dominant vegetation consists of open non-native grassland. Oftentimes, grassland exists as the understory ground cover for wooded areas creating oak and walnut savannahs. Small isolated areas of freshwater marsh are also found around Puddingstone Reservoir.

Vegetation

The variety of topography, soil types, slope aspects and water availability within this SEA create a range of physical habitats, which support numerous plant species. Many species, although often different in their growth form, prefer similar habitat characteristics and are often found in recurring

assemblages to form plant communities. Eight major plant communities are found within the East San Gabriel Valley SEA. Plant communities within the SEA were classified using standard methodology and terminology. Most of the communities discussed correspond directly with those listed in Holland's Preliminary Descriptions of the Terrestrial Natural Communities of California (1986 and 1992 update). Other communities are named based on dominant species and/or commonly used terminology.

- Oak woodland: Is a plant community dominated by species of the genus *Quercus*. Within this SEA the dominant species is the coast live oak, which typically grows to heights of 20 to 40 feet and forms either closed or open canopies. Understory vegetation varies from grassland in areas subject to grazing to shrubs where topography is steeper and/or grazing has been relaxed. This vegetation may also intergrade with shrub communities. Within this SEA, oak woodland is scattered throughout all components where it is most prevalent on north-facing slopes and in drainage bottoms.
- Oak riparian forest: A highly related community found in the SEA includes oak riparian forest. It is also dominated by coast live oak. The primary difference between oak woodland and oak riparian forest is the greater availability of water in riparian situations, which is expressed in a dense tree canopy cover and tree clusters. A greater number of hydrophytic (water favoring) plant species are also found in the understory. Typical riparian trees, such as western sycamore and willow occasionally occur as well. Oak riparian forest is most well developed within Walnut Creek. Riparian trees are also scattered in other drainages throughout the Buzzard Peak component of this SEA.
- Walnut woodland: This community is dominated by the California walnut, which grows 10 to 30 feet high. More often than not, the California walnut grows in open stands; however, closed tree canopies are not uncommon. In similar fashion to oak woodlands its understory varies from grasses to shrubs. Thus, it forms stands ranging from savannahs to forests throughout the East San Gabriel Valley SEA. It is most common within the Bonelli/Walnut Parks, South Hills, and Buzzard Peak components.
- Southern willow scrub: Is found along Live Oak Creek upstream and at the point where the creek flows into Puddingstone Reservoir in the Bonelli/Walnut Parks component. Smaller patches of this community are also found scattered along drainages in the Buzzard Peak component. This community is dominated by species of willow, which form nearly monotypic stands due to their dense growth. These stands generally reach 10 to 20 feet in height with little understory vegetation.
- Mixed chaparral: Is a shrub community composed of robust species. Within this SEA these species include laurel sumac, toyon, lemonadeberry and Mexican elderberry. Along with other shrub species, chaparral forms dense vegetation covers growing five to ten feet in height. The development of chaparral is most pronounced within the South Hills, Bonelli/Walnut Parks, and Buzzard Peak components.
- Coastal sage scrub: exhibit less robust structure within this SEA. This plant community is dominated by California sagebrush, California encelia, white sage, black sage, and California buckwheat. Coastal sage scrub also forms dense stands, which grow three to four feet in height. Within this SEA, it is generally found in scattered patches, which are highly integrated with mixed chaparral. These communities are primarily located in the South Hills, Bonelli/Walnut Parks, Via Verde, and Buzzard Peak components.
- Non-native grassland: Consists of non-native annual grasses and forbs. These

opportunisticly growing species include brome grasses, wild oats and mustards. Characteristic of other parts of Southern California, this community became established as a result of livestock grazing. In the process native vegetation is removed, sometimes by mechanical means, and replaced by more adventitious species. Non-native grassland is found throughout all components of this SEA.

- Freshwater marsh: Small areas supporting freshwater marsh are found at scattered locations along the shoreline of Puddingstone Reservoir. This community may also exist at other locations, in or adjacent to artificially created impoundments used to water livestock. Freshwater marsh requires perennially shallow water or saturated soils. Dominant plants are comprised of emergent species including cattails and bulrushes.

Wildlife

Wildlife populations within the East San Gabriel Valley SEA are generally expected to reflect lower diversity and abundance. This is due to the influences of surrounding development and location of recreational uses over relatively large areas of the SEA components, which tends to compromise habitat quality and value. Analysis of invertebrates on any given site generally is limited by a lack of specific data; however, the SEA is considered sufficient to encompass moderately healthy populations of common invertebrate species. Fair numbers of amphibians are expected to be present primarily due to the aquatic and semi-aquatic habitats provided by Puddingstone Reservoir, and riparian habitats along Live Oak Channel and Walnut Creek. Diversity and evenness among these populations, however, is likely to be degraded due to history of urbanization resulting in few species adaptable to this sort of environment.

Similar effects would be anticipated for reptiles. Reptilian species typically found in suburban and rural areas are expected in relatively high numbers. Less common, and perhaps, locally extinct would be those species that are more secretive in their habitats and/or are not as prolific.

A surprisingly high diversity of birds are documented within this SEA including a population of California gnatcatcher, a federally threatened species. For numerous upland, raptorial, and water associated birds the East San Gabriel Valley SEA provides a mosaic of habitats. Between woodland, shrubland, grassland and wetlands, diverse populations of birds are able to meet nesting, foraging, and migratory requirements.

Mammal populations also reflect the suburban environs imparting this SEA. Small mammals are expected to be uneven in their diversity with more adaptive, introduced European species in greater numbers compared to others species. Medium sized mammal populations are expected to exhibit the same characteristics. Large mammals are largely absent on a resident basis.

- Wildlife Movement: The East San Gabriel Valley SEA represents the only regional wildlife linkage between the San Gabriel Mountains and the Puente Hills/Chino Hills complex. Unlike the commonly held concept of a corridor, however, this SEA contains a series of discontinuous habitat blocks and patches rather than an unbroken corridor for movement. As such, this SEA facilitates movement and exchange between larger habitat areas by permitting terrestrial "island-hopping" between the SEA components.

Using birds as an example, movement may be initiated by an individual or group of birds in either the San Gabriel Mountains or the Puente Hills. Larger species, with the capacity to cover long distances, may make the passage as one segment of its journey. Smaller species, however, lacking physical or behavioral capacity may not be able to attain this movement under normal circumstances. By utilizing various component parts of the SEA, the same species can cover this journey in several

smaller trips. The same example may also apply to winged insects and wind-borne plant pollen. Interaction between, not just through the components can occur as well.

This same function probably does not apply to other taxonomic groups. It is highly doubtful that amphibian, reptile and most mammal populations use this corridor as effectively as birds, if at all. Mule deer, for example, do not occur within Bonelli Park but are common in the San Gabriel Mountains and the Puente Hills. However, some mammals, which tolerate urban environments; such as Virginia opossum, raccoon, and striped skunk, use the corridor in the manner described. Even mountain lions periodically enter Bonelli Park and Walnut Creek Park from the outside by way of travel routes related to SEA components.

The manner in which the East San Gabriel Valley SEA allows wildlife populations in different areas to interact is less than ideal. However, exchange in the manner described above is dictated by the widespread urbanization of the region; it is the only remaining way regional interaction can occur and contribute to the maintenance of genetic variability and health of regional wildlife populations.

Sensitive Biological Resources

Sensitive biological resources are habitats or individual species that have been given special recognition by federal, state, or local conservation agencies and organizations as endangered, threatened, rare, or otherwise sensitive. This is principally due to the species' declining or limited distribution or population sizes, usually resulting from habitat loss. Watch lists of such resources are maintained by the California Department of Fish and Game (CDFG), the United States Fish and Wildlife Service (USFWS), and special groups such as the California Native Plant Society (CNPS). The following sections indicate the habitats as well as plant and animal species present, or potentially present within the East San Gabriel Valley SEA, that have been afforded special recognition.

- **Sensitive Plant Communities/Habitats:** This report/description supports several habitat types considered sensitive by resource agencies, namely the CDFG, due to scarcity and serving as habitat for a number of state and federally listed endangered, threatened, and rare vascular plants, bird and reptile species. Vegetation communities include: oak riparian woodland, walnut woodland, southern willow scrub, coastal sage scrub, and freshwater marsh, which occur throughout the area. These communities, or closely related designations, are considered highest-inventory priority by the CDFG, indicating that they are experiencing a decline throughout their range. The distribution and floral composition of these communities is discussed above.
- **Sensitive Species:** Sensitive species include those listed, or candidates for listing by the USFWS, CDFG, and CNPS. These species include, but are not limited to, Braunton's milk vetch, Mexican flannelbrush, thread-leaved brodiaea, California brown pelican, bald eagle, southwestern willow flycatcher, California gnatcatcher, and least Bell's vireo. In addition, the SEA identifies other species observed, recorded in the CNDDDB, or reported in previous documentation as observed within or in the immediate vicinity of the SEA.

El Segundo Dunes SEA

The El Segundo Dunes, located at the west end of the Los Angeles International Airport, are the last remnants of a coastal dune system that once stretched several miles further, north and south. The vegetation found here does not occur anywhere else in the County, and is uncommon throughout southern California. The vegetation is southern dune scrub which is adapted to sandy, well-drained soils. The vegetation shows zonation, changing gradually as one moves away from the immediate

coast into coastal sage scrub. Many plants and invertebrates are restricted to this environment and are not found elsewhere. One of these endemic organisms is the El Segundo Blue (*Shijimiaeoides battoides allyni*), a butterfly species. The distribution of this butterfly is entirely restricted to the El Segundo Dunes. Because of its rarity and highly limited range, the butterfly is officially recognized as an endangered species by the U.S. Fish and Wildlife Service. This small piece of dune habitat is extremely valuable as the final example of a community, which was once more common than at present along the Los Angeles County and Southern California coastline.

Griffith Park SEA

Griffith Park lies at the eastern end of the Santa Monica Mountains. It supports the coastal sage scrub, chaparral, riparian, and southern oak woodland plant communities that are typical in the interior mountain ranges of southern California. What makes Griffith Park important is its geographical location. It has become an island of natural vegetation surrounded by urban and suburban development.

These isolated areas are important for preserving and documenting the geographical variability of vegetation and wildlife that formerly occurred throughout the region. They serve as reservoirs of native species that could be of scientific and economic value in the future. In addition, birds rely on these islands for areas to rest and feed along their north-south migration routes. In the case of Griffith Park, this function is made even greater than might be expected because it serves as a corridor for any gene flow and species movement that may still take place between the Santa Monica and San Gabriel Mountains via the Verdugo Mountains.

Harbor Lake Regional Park SEA

Harbor Lake Regional Park supports one of two remaining wetlands that once covered the South Bay area. The freshwater plants and animals found here are completely surrounded by residential and industrial facilities. This type of habitat has been filled, drained, and lost to development throughout most of Los Angeles County. In some areas, man-made lakes and ponds have created small freshwater marshes along their edges, but this is minimal when compared to the large expanses of freshwater marsh that were once found in the Los Angeles basin.

Freshwater marsh habitat supports a great diversity of wildlife. Most of the bird species found here are dependent in some way on the surface moisture and vegetation, and would not be able to survive without it. It is also a habitat that supports several species of amphibians. Frogs and toads can be found here that are becoming extremely difficult to find throughout Southern California. The marsh is also an important area for migratory birds. Because Harbor Lake Regional Park and Madrona Marsh are the only habitat of this type in southern Los Angeles County, they serve as miniature wildlife refuges. Waterfowl, shorebirds, marsh birds, and others can be found on the marsh in numbers during the spring and fall migration.

Joshua Tree Woodland SEA

The Joshua Tree Woodlands Significant Ecological Area (SEA) is located in the western portion of the Antelope Valley west and northwest of the Antelope Valley California Poppy Reserve in an unincorporated area of Los Angeles County. The SEA consists of six separate units, five of these areas are in close proximity to each other between the Kern County line to the north, the California Aqueduct and Fairmont Butte to the south, 220th Street West to the west, and 140th Street West to the east. The sixth, and furthest western extent of Joshua tree woodland in Southern California, is located partially within the Angeles National Forest, east of the Interstate-5 freeway.

The topography of the SEA is extremely flat with the land sloping less than 200 feet in approximately

five miles. The location and orientation of the SEA represents a matrix of remnant stands of Joshua tree woodland among a patchwork of disturbed areas. Nearly all of the land within the SEA is undisturbed and vegetated. Most of the land surrounding the SEA is disturbed in the form of agricultural use with a few scattered rural residences. All of the acreage within this SEA is in unincorporated County jurisdiction.

Vegetation

Vegetation within the Joshua Tree Woodland SEA is limited to a few plant communities with relatively few species. However, the dominant community, Joshua tree woodland, is in good condition throughout most of the SEA and includes many mature stands. All plant species observed or recorded in previous documentation within the study area are indicated in the Comprehensive Floral & Faunal Compendium of the Los Angeles County SEA Update Study 2000 Background Report. Sensitive plant species occurring or potentially occurring within the SEA are discussed below in the Sensitive Biological Resources section.

Plant communities within the SEA were classified using standard methodology and terminology. Most of the communities discussed in this study correspond directly with those listed in Holland's Preliminary Descriptions of the Terrestrial Natural Communities of California (1986 and 1992 update). Other communities are named based on dominant species within them and/or commonly used terminology.

- Desert scrub: Is a moderately tall, fairly open shrubland with several species contributing to the canopy. Dominants often include Great Basin sage brush, antelope bush, saltbush, and/or rabbitbrush, with several perennial grasses dispersed between the shrubs. Within the SEA, this community intergrades with Joshua tree woodlands.
- Non-native grassland: Consists of dominant invasive annual grasses that are primarily of Mediterranean origin. Dominant species found within this community include slender oats, wild oats, ripgut brome, foxtail chess, golden tops, *Mediterranean Schismus*, and wild mustard. Non-native grasslands are located in small patches intermingling with Joshua tree woodland throughout the SEA.
- Joshua tree woodland: Is an open woodland with Joshua tree usually as the only arborescent species with numerous smaller shrub species interspersed between. Shrub species include Great Basin sagebrush, antelope bush, saltbush, rabbit brush, and creosote bush. Joshua tree woodland occupies approximately 95 percent of the SEA.
- Juniper woodland: Is an extremely open woodland dominated by California juniper, with an understory typical of desert scrub as it is described above. This community is dominant in a few areas within the SEA but is usually loosely scattered within the Joshua tree woodland.
- Disturbed or barren areas: Either completely lack vegetation or are dominated by ruderal species. Ruderal vegetation typically found within the SEA includes non-native grasses and weedy herbaceous species, native and non-native, including doveweed, mustards, telegraph weed, Russian thistle, dock, yellow star thistle, Australian saltbush, and cocklebur. Disturbed areas occur around five of the six SEA units and include active and fallow agriculture and residential developments, paved roads, dirt access roads, and other similarly disturbed areas.

Wildlife

Wildlife populations within the SEA reflect somewhat lower diversity and abundance for the habitat types present due to the small size of the SEA areas, the homogeneity of the topography and

habitat, and influences of edge effect from surrounding agricultural lands uses. An assessment of invertebrate populations is made difficult due to the lack of data but the SEA is sure to include more common species in fair numbers. Amphibian populations are generally scarce in desert communities and no riparian habitat is available within the SEA. Many essential reptilian habitat characteristics such as open habitats that allow free movement and high visibility and small mammal burrows for cover and escape from predators and extreme weather are present within the SEA. These characteristics as well as the availability of fallen and decomposing woody material are likely to support a wide variety of reptilian species.

The scrubland, woodland, and grassland habitats in the SEA provide foraging and cover habitat for year-round resident and seasonal resident song birds. In addition, the SEA encompasses abundant raptor foraging, perching, and nesting habitat. The combination of these resources provide for a diversity of bird species.

Mammal populations are suggested to also reflect the generally disturbed environs influencing this SEA. Small mammals are expected to be uneven in their diversity with more adaptive species and introduced European species being in high numbers compared to others. Medium sized mammal populations are expected to exhibit the same characteristics. Large mammals are largely absent on a resident basis. Sensitive wildlife species occurring or potentially occurring within the SEA are discussed in the Sensitive Biological Resources section of this document.

- **Wildlife Movement:** Wildlife movement within the Joshua Tree Woodland SEA is limited to local movement. Animals foraging within the SEA are unlikely to occur in concentrated areas due to the homogeneity of the topography and habitat of the SEA. However, local movement to and from the different SEA areas as well as to and from the San Gabriel Mountains and the Tehachapi Mountains is restricted due to the disturbed nature of the Valley floor. Wildlife movement, therefore, is likely to converge in areas where movement is still possible causing concentrated movement areas or bottlenecks.

Sensitive Biological Resources

Sensitive biological resources are habitats or individual species granted special recognition by federal, state, or local conservation agencies and organizations as endangered, threatened, rare, or otherwise sensitive due to the species' declining or limited distribution or population sizes, usually resulting from habitat loss. Watch lists of such resources are maintained by the California Department of Fish and Game (CDFG), the United States Fish and Wildlife Service (USFWS), and special groups such as the California Native Plant Society (CNPS). The following sections indicate the habitats as well as plant and animal species present, or potentially present within the SEA, that have been afforded special recognition.

- **Sensitive Plant Communities/Habitats:** This report/description supports one habitat type, Joshua tree woodland, considered sensitive by resource agencies, namely the CDFG California Natural Diversity Database (CNDDDB)], because of its scarcity and support of a number of state and federally listed endangered, threatened, and rare vascular plants, as well as several sensitive bird and reptile species. Joshua tree woodland occurs throughout the study area. This community is considered a highest-inventory priority community by the CDFG, indicating that it is experiencing a decline throughout its range.
- **Sensitive Species:** Sensitive species include those listed, or candidates for listing by the USFWS, the CDFG, and the CNPS. These species include, but are not limited to, alkali mariposa lily, California horned lizard, golden eagle, Swainson's hawk, burrowing owl, loggerhead shrike, western mastiff bat, and Tehachapi pocket mouse. In addition, the SEA

identifies other species observed, recorded in the CNDDDB, or reported in previous documentation as observed within or in the immediate vicinity of the SEA.

Malibu Coastline SEA

This area is a relatively undisturbed coastal region where upwelling of nutrient-rich waters and a variety of habitats support highly productive and extremely diverse marine communities. The area possesses some of the best kelp bed habitat south of Santa Barbara, and supports the only remaining natural kelp beds off the mainland coast of Los Angeles County. This kind of area may be one hundred times more productive than adjacent sand bottom communities, and provides refuge, food, and nursery grounds for thousands of species.

Rocky outcrops alternate with sandy stretches along this coastline, and outcrops are found to a depth of 600 feet. The stability of the substrate and the variety of exposures provide microhabitats for a great number of organisms. Characteristically, rocky shorelines from the lower intertidal zone to about 100 foot depth can be the most biologically active areas in the world. Point Dume is the only place rocky intertidal habitat occurs between Palos Verdes Peninsula and well into Ventura County.

This coastline also possesses the only complete, undisturbed sandy beaches remaining in Los Angeles County. Although very dynamic in physical stability and therefore unfavorable for the development of a diverse biological community, these areas do offer habitat for a number of organisms. An important microcommunity of decomposers is present. Sandy beaches provide feeding areas for many bird species. In addition, the soft substrate offers a repository for eggs and nursery grounds for many species. This shoreline remains in essentially a native state as a remnant of what once was typical of rock and sand shoreline in southern California. Artificial modifications have been limited to small local areas. West of Point Dume some minor pollution does occur but the kelp is healthy. East of Point Dume there is minor to moderate pollution and kelp does not grow below 35 feet.

Palos Verdes Peninsula Coastline SEA

Unparalleled headlands, rocky shoreline, and the land-sea interface provide for a tremendous variety of biotic resources in this area. It is one of the most biologically diverse and productive regions in Los Angeles County, and contains several biotic communities including rocky intertidal, kelp bed, coastal strand, and coastal sage scrub. One small sandy beach is periodically present on an ephemeral basis at Portuguese Bend. This ten mile stretch of coastline, between Point Fermin and Bluff Cove, is the only sizeable rocky intertidal area in the county.

Rocky shores support a great number of species. This is primarily due to the highly diverse, oxygen and food-rich environment offered by this habitat. These features are provided by the stability and variety of substrates present, the aeration of water through wave splash, and the upwelling of nutrient-rich waters along the southern California coast.

Kelp beds dominated by giant kelp (*Macrocystis pyrifera*), are found in some locations in the area. These have tremendous value to the biota of inshore areas. Where they occur they may locally account for 90 percent of the biomass. They provide food and habitat for hundreds of species. Many of the species this habitat supports are the basic component of the food chains of inshore fishes. Kelp beds are also important because they reduce wave shock to shorelines. This protection helps maintain the abundance and complexity of marine life found there.

Kelp beds were originally common off the southern California coast wherever rocks were present at shallow depths. However, due to man-made and natural phenomena, this habitat has been severely diminished in the region, and is now rare in Los Angeles County. A kelp bed habitat restoration

program has begun in the area, and kelp has been reestablished at abalone Cove and Halfway Point. Smaller colonies are now reestablishing elsewhere.

The coastal cliffs found in the area range in elevation from 100 to 300 feet and support coastal sage scrub and coastal strand. These and offshore rocks offer ideal roosting and feeding sites for numerous shorebirds, gulls, and other seabirds, including the endangered brown pelican. The area is an important stop for migrating birds as they fly along the coast or across the Santa Monica Bay. In addition, the bluff tops, which are now abandoned agricultural fields, are utilized by many species as wintering feeding grounds. One endangered species, the peregrine falcon, and one very uncommon species, the prairie falcon, have been known to winter here in recent years.

The bluff tops and cliffs have been disturbed by pedestrian use, residential development, and agriculture. Only very small, isolated ravines remain in a natural state. The health of the marine environment is relatively poor. The shoreline suffers major biological impairment. This is commonly blamed on over collection by humans, and intense pollution.

Point Dume SEA

Point Dume is one of two remaining areas in Los Angeles County where a diverse and healthy mixture of terrestrial and marine habitats can be found in close association. Marine habitats consist of an unprotected rocky shore with outlying reefs, rocks, kelp beds, sandy beach pockets, and numerous small caves. Due to strong upwellings along the coast bringing in nutrient-rich waters, they possess highly diverse and productive marine communities. This relative healthiness is also due to limited public access, which has protected the fragile marine ecosystems.

Coastal strand vegetation is found on sandy beaches below bluffs rising 100 to 200 feet above the coast. *Coreopsis gigantea* and *Dudleya caespitosa* are found in these communities at the southern limit of their range. Several small drainages cut through the bluffs and extending up to a mile inland. The slopes are covered by Venturan coastal sage scrub. The value of these communities is increased by the unique geographic position of Point Dume. This headland extends into Santa Monica Bay more than a mile beyond the rest of the Malibu coast, and it is located within the Pacific Flyway. As result, the area is an important resting and jumping-off point for migratory birds. Without the remaining terrestrial habitats, this refuge would be lost.

Portuguese Bend Landslide SEA

The Portuguese Bend Landslide is the largest area of natural vegetation remaining on the Palos Verdes Peninsula. The geographical location and geological history of the peninsula make remaining habitat extremely valuable for ecological and scientific reasons. The peninsula, which was an island in recent geological time, has close floral and faunal similarities to the Channel Islands. This feature makes the Portuguese Bend Landslide area a natural research laboratory for the study of island biogeography and evolutionary ecology.

The vegetation found in the area is coastal sage scrub. This plant community supports a surprising number and variety of species. There are at least three races of birds resident on the peninsula that are found nowhere else except the Channel Islands. These are the insular forms of the orange-crowned warbler, western flycatcher, and Allen's hummingbird. The same phenomena have been documented for plant species. A species of live-forever, *Dudleya virens*, which is endemic to the Channel Islands and the Palos Verdes Peninsula, is found near Point Vicente.

The area also serves as habitat to many migrating birds moving through the region in fall and spring. The Peninsula is a headland that juts into the Pacific several miles further than the surrounding

coastline. Migrating terrestrial and shore birds flying over the open ocean on their north--south migration along the Pacific Flyway, spot this headland and stop to rest and feed. Many of these birds will stay and spend the winter in the area. Thus, the geographic position makes this habitat much more important than might otherwise be expected.

Puente Hills SEA

The Puente Hills Significant Ecological Area (SEA) is located in the Puente Hills in southeastern Los Angeles County. The Puente Hills are an inland topographical feature separating the San Gabriel Valley to the north and the coastal plain to the south. The hills are oriented in an east-west manner and stretch from the San Gabriel River on the west approximately to the county line on the east where they transition into the Chino Hills. They are the northwestern end of the group known as "Peninsular Ranges" that extends south into San Diego County and east to the San Jacinto massif. The SEA includes portions of the Whittier Narrows Dam Recreation Area and Flood Control Basin and most of the undeveloped land in the Puente Hills in Los Angeles County.

The Puente Hills SEA encompasses the remaining relatively undisturbed habitat areas in the Los Angeles County portion of the Puente Hills. These include: portions of the Montebello Hills, Whittier Narrows, Sycamore Canyon and Turnbull Canyon in the west; Powder Canyon in the central portion of the SEA; and Brea Canyon and Tonner Canyon in the east. Each of these areas contains relatively undisturbed examples of woodland, shrubland, grassland and wetland communities that once existed throughout the inland hills complex of the Los Angeles basin. Elevations range from approximately 200 to 1,476 feet above mean sea level (MSL).

Included among these habitats are excellent examples of oak woodland, oak riparian forest, southern willow scrub and walnut woodland. Intermixed with these are stands of mixed chaparral, coastal sage scrub and grasslands, which, taken as a whole, form a valuable wildlife habitat unit of regional importance for Los Angeles County and the peninsular Ranges of Southern California.

Interconnecting these habitat areas are corridors of native vegetation, naturalized vegetation or sparsely developed land. While the last two types of areas do not represent key regional habitats, they have been recommended for inclusion in the SEA recognizing the importance of maintaining exchange between plant and animal populations throughout the Puente Hills, the Chino Hills and Santa Ana Mountains.

Vegetation

The variety of topography, soil types, slope aspects and water availability within this SEA creates a range of physical habitats, which support numerous plant species. Sensitive plant species occurring or potentially occurring within the SEA are discussed below in the Sensitive Biological Resources section. Many of these species, although often different in their growth form, prefer similar habitat characteristics and are often found in recurring assemblages, forming plant communities. Plant communities within the SEA were classified using standard methodology and terminology. Most of the communities discussed correspond directly with those listed in Holland's Preliminary Descriptions of the Terrestrial Natural Communities of California (1986 and 1992 update). Other communities are named based on dominant species within them and/or commonly used terminology.

- Oak woodland: Is a plant community dominated by species of the genus *Quercus*. Within this SEA the dominant oak is the coast live oak, which typically grows to heights of 20 to 40 feet and occurs in both closed and open tree canopy configurations, called "woodland" and "savannah" respectively. Understory vegetation varies from grassland in areas subject to

grazing to shrubs where topography is steeper and/or grazing has been less intense. Oak woodlands may intergrade with shrub communities. Within this SEA, oak woodland is scattered throughout many hillsides, drainages and broad valleys. It is most prevalent on north-facing slopes and in drainage bottoms. Particularly large complexes of oak woodland are found in Powder Canyon, Brea Canyon, and Tonner Canyon.

- Oak riparian forest: A highly related community found in this SEA is oak riparian forest. This community is also dominated by coast live oak. The primary differences between oak woodland and oak riparian forest are the existence of a drainage adjacent to oak riparian forest and coincidence of oaks with riparian vegetation that is found only near water. There is availability of water in riparian situations, which leads to a denser tree canopy and higher density of trees. There is also a greater number of hydrophytic (water favoring) plant species in the understory. Typical riparian trees such as western sycamore and willow commonly co-occur with the oaks. Oak riparian forest is best developed within the Sycamore Canyon, Turnbull Canyon, Powder Canyon, Brea Canyon, and Tonner Canyon drainages. It is also scattered in other drainages throughout the SEA.
- Walnut woodland: Often intergrades with oak dominated woodlands or develops as a distinct community. This community is dominated by the Southern California black walnut, which grows 10 to 30 feet high. More often than not, the Southern California walnut grows in open stands; however, closed tree canopies are not uncommon. In similar fashion to oak woodlands its understory varies from grasses to shrubs. Thus, it forms stands ranging from savannahs to forests throughout the Puente Hills SEA. It is most common on the hillsides of Brea Canyon and Tonner Canyon where it forms some of the best developed examples of walnut woodland south of Ventura County in Southern California.
- Southern willow scrub: Well developed southern willow scrub communities are found along several major canyon bottoms in this SEA, particularly Brea Canyon and Tonner Canyon. Smaller patches of this community are also found scattered along smaller drainage and tributaries, as well as at seeps and around artificially created impoundments used for livestock watering. This community is dominated by species of *Salix*, which form dense, nearly monotypic stands. These stands generally reach 10 to 20 feet in height with little understory vegetation.
- Mixed chaparral: Is a shrub community composed of robust species. Within this SEA these species include laurel sumac, toyon, lemonadeberry and Mexican elderberry. These and other shrub species form dense vegetation covers growing five to ten feet in height. The development of chaparral is most pronounced and extensive within Sycamore Canyon, Turnbull Canyon, Brea Canyon and Tonner Canyon.
- Coastal sage scrub: A shrubland community exhibiting less robust structure found in this SEA is coastal sage scrub. This plant community is dominated by California sagebrush, California buckwheat, California encelia, white sage, and black sage. Coastal sage scrub sometimes forms dense stands, which grow three to four feet in height. Within this SEA it is generally found in scattered patches, which are highly integrated with mixed chaparral. This vegetation is even common in areas being used for oil extraction where, despite disturbance, coastal sage scrub persists.
- Non-native grassland: Is dominated by non-native annual grasses and forbs. These opportunistically growing species include brome grasses, wild oats and mustards. As is characteristic in other parts of Southern California, this community became established as a result of livestock grazing, whereby native vegetation is removed (sometimes by mechanical

means) and replaced by more adventitious species. Non-native grassland is found throughout all areas of this SEA.

- **Freshwater marsh:** Small areas supporting freshwater marsh are found at scattered locations in the broader valleys along major drainages. This community may also exist at other locations in and around artificially created impoundments used to water livestock. Freshwater marsh requires perennially shallow water or saturated soils. Dominant plants are emergent species including cattails and bulrushes.

Wildlife

Wildlife within the Puente Hills SEA has been frequently documented to be very diverse and abundant due to the large acreage of natural open space, the diversity of habitat types, and regional connectivity. Thus, diversity may also be a function of the high level of biodiversity found in the Peninsular Ranges. While a few wildlife species are entirely dependent on a single vegetative community, the entire mosaic of all the vegetation communities within the area and connected areas constitutes a functional ecosystem for a wide variety of wildlife species. This includes areas both within the SEA as well as the regional ecosystem.

Analysis of invertebrates on any given site generally is limited by a lack of specific data; however, the size of the SEA and diversity of habitats present is considered sufficient to encompass healthy populations of a large number of invertebrate species. Amphibian populations are generally restricted in semi-arid and arid habitats but may be particularly abundant where riparian and woodland areas occur. The SEA is likely to support a variety of amphibians in abundance within wetland areas along the major canyon bottoms and the moister oak woodland areas. Many essential reptilian habitat characteristics are present within the SEA. These include open habitats that allow free movement and high visibility and small mammal burrows for cover and escape from predators and extreme weather. These characteristics as well as the variety of habitat types present support a wide variety of reptilian species.

The scrubland, woodland, riparian, and grassland habitats in the SEA provide foraging and cover habitat for year-round residents, seasonal residents, and migrating song birds. The SEA encompasses many year-round water sources and includes abundant raptor foraging, perching, and nesting habitat. The combination of these resources as well as the mosaic of many community types provides for a high diversity of bird species. Several of these species may use this SEA as their only consistent occurrence in the southeastern portion of the county.

Not unlike other taxonomic groups, mammal populations within the SEA are diverse and reflective of the unique combination of several habitat types. Unlike many other inland hills within the Los Angeles Basin, this SEA is large enough and connected enough to support relatively stable large mammal populations, despite the urban surroundings.

- **Wildlife Movement:** Evidence of significant wildlife movement throughout the Puente Hills SEA has been documented in a two year carnivore study commissioned by the Santa Monica Mountains Conservancy as part of a multi-jurisdictional effort to establish a region wide wildlife movement linkage. This SEA represents the Los Angeles County portion of a continuous series of natural open space within the Puente Hills and Chino Hills. Overall, this open space extends north and west from State Route 91 (SR-91) in Orange and Riverside Counties to the Whittier Narrows reach of the San Gabriel River. The Puente/Chino Hills are a natural, physical link between the Santa Ana Mountains and the San Gabriel River. The San Gabriel River flows from and links to the San Gabriel Mountains. By virtue of these linkages and a complex of interconnected habitat units throughout the Hills, the Puente/Chino Hills function as

both an important wildlife linkage and resident habitat area for regional wildlife populations.

Within the SEA itself several habitat units, well defined by major canyons, exist. These include Sycamore Canyon, Turnbull Canyon, Powder Canyon, Brea Canyon and Tonner Canyon. Each of these, in and of themselves, is capable of supporting a diverse and abundant wildlife. More importantly, however, these habitat units are connected by a series of open space corridors, which allows population exchange to occur. Thus, maintenance of biological diversity and population viability is afforded throughout the SEA, and the chance of local species extinctions due to isolation is minimized. This function is acutely important for wide ranging species, which meet their breeding and/or habitat requirements over broad areas.

Although several major arterial roads and highways cross the hills, continued use of under-crossings and surface crossings by wildlife has been documented. This movement is largely east-west trending between large habitat blocks located in the western, central and eastern portions of the SEA.

Sensitive Biological Resources

Sensitive biological resources are habitats or individual species that have been granted special recognition by federal, state, or local conservation agencies and organizations as endangered, threatened, rare, or otherwise sensitive, this is due to the species' declining or limited distribution or population sizes, usually resulting from habitat loss. Watch lists of such resources are maintained by the California Department of Fish and Game (CDFG), the United States Fish and Wildlife Service (USFWS), and special groups such as the California Native Plant Society (CNPS). The following sections indicate the habitats as well as plant and animal species present, or potentially present within the Puente Hills SEA, that have been afforded special recognition.

- **Sensitive Plant Communities/Habitats:** This report/description supports several habitat types considered sensitive by resource agencies, namely the CDFG [California Natural Diversity Database (CNDDDB), 2005], because of their scarcity and because they are habitat for a number of state and federally listed endangered, threatened, and rare vascular plants, as well as several sensitive bird and reptile species. These communities include Oak Riparian Woodland, Walnut Woodland, Southern Willow Scrub, Coastal Sage Scrub and Freshwater Marsh, which occur throughout the Puente Hills SEA area. These communities, or closely related designations, are considered highest-inventory priority communities by the CDFG, indicating that they are experiencing a decline throughout their range.
- **Sensitive Species:** Sensitive species include those listed, or candidates for listing by the USFWS, CDFG, and CNPS. These species include, but are not limited to, Plummer's mariposa lily, western spadefoot, southwestern pond turtle, San Diego coast horned lizard, Cooper's hawk, Swainson's hawk, white-tailed kite, coastal cactus wren, California gnatcatcher, loggerhead shrike, least Bell's vireo, and Southern California (ashy) rufous-crowned sparrow. In addition, the SEA identifies other species observed, recorded in the CNDDDB, or reported in previous documentation as observed within or in the immediate vicinity of the SEA.

Rio Hondo College Wildlife Sanctuary SEA

This area has been designated as a Significant Ecological Area because it is currently used as a wildlife sanctuary by the faculty and students at Rio Hondo College. The area possesses good examples of the riparian woodland, chaparral, oak woodland, and coastal sage scrub communities found in the west end of the Puente Hills. Its proximity to the Rio Hondo College campus makes it a highly valuable

educational and resource facility.

The biotic communities here contain a variety of plant life and an abundant fauna, including over 100 species of vertebrates. The biological resources of the sanctuary are widely used by students at the college. Only minutes from campus, it is an excellent natural classroom and laboratory.

Rolling Hills Canyons SEA

The Rolling Hills Canyons are one of the last remaining areas of natural vegetation on the Palos Verdes Peninsula. The geographical location and geological history of the peninsula make remaining habitat extremely valuable for ecological and scientific studies. The peninsula, which was an island in recent geological time, has close floral and faunal similarities to the Channel Islands. This feature makes all remaining native communities on the peninsula a natural research laboratory for the study of island biogeography and evolutionary ecology.

The vegetation in these canyons is a complex of coastal sage scrub, chaparral, and riparian communities. This association is very diverse, and supports a good complement of native species. Among these are at least three races of bird species that are resident on the peninsula, and found nowhere else except the Channel Islands. These are the insular forms of the orange-crowned warbler, western flycatcher, and Allen's hummingbird. The same phenomenon has been documented for plant species.

These small fingers of vegetation are also exceedingly important as an area for migratory birds. The peninsula is a headland that juts into the Pacific several miles further than the surrounding coastline. Migrating terrestrial and marine birds flying over the open ocean on their north-south migration along the Pacific Flyway, spot this headland and stop to rest and feed. Many of these birds will stay, and spend the winter in the area. Thus, the geographic position of these small canyons make them much more important than might otherwise be expected.

San Andreas SEA

The San Andreas Significant Ecological Area (SEA) is located in the western portion of the Antelope Valley in an unincorporated area of Los Angeles County. The area includes a small portion of the western Tehachapi foothills and then stretches in a southeasterly direction to include Quail Lake, the northern foothills of Liebre Mountain and Sawmill Mountain, large portions of Portal Ridge, Leona Valley, Ritter Ridge, Fairmont and Antelope Buttes, Anaverde Valley, Lake Palmdale, terminating at Barrel Springs, a sag pond near Palmdale.

The San Andreas Fault Zone SEA encompasses a variety of topographic features. The location and orientation of the SEA coincides with a segment of the San Andreas Fault Zone. At its northwest end, the SEA encompasses a portion of the south-facing foothills of the Tehachapi Mountains. Moving southeast, the SEA contains the north-facing slopes of Liebre and Sawmill Mountains. The upper slopes of these mountains are densely vegetated with chaparral and scattered mixed woodlands. The lower slopes are more sparsely vegetated with scrub species, mixed scrub and grassland. The major grasslands occur on the flat Antelope Valley floor. Most of this portion of the SEA is undisturbed open space with few scattered residential developments. The peak of Liebre Mountain is the highest point in the SEA at 5,701 feet above mean sea level (MSL).

Portal Ridge, a series of peaks southeast of Liebre Mountain and on the north side of the San Andreas Fault Zone, is included in the SEA. Upper slopes are vegetated with dense chaparral, juniper woodland, and Joshua tree woodland while lower slopes are vegetated with scrub species. A series of small lakes occur along the base of the south-facing slopes including Lake Hughes, Munz Lake, Elizabeth Lake, and other smaller unnamed ponds. These are sag ponds on the Fault. The

lakes are dammed areas uniting several sag ponds. Further southeast, the SEA surrounds Amargosa Creek and a large portion of its watershed located in the Leona Valley. On the north-facing slopes, two large washes drain to the Valley floor, namely Myrick Canyon and Willow Springs Canyon. The vegetation transitions to grasslands as the SEA stretches north across the valley floor and encircles Fairmont Butte and the Antelope Buttes of the Antelope Valley California Poppy Reserve.

Ritter Ridge is on the most easterly portion of the SEA. Slopes on the north side of this ridge line are vegetated with a Joshua tree/juniper mixed woodland. South-facing slopes contain a mixture of scrub and chaparral communities. Many of these are unusual occurrences of vegetation for the mountains. Possibly the unusual vegetation is on land that has moved along the fault from another location. This section of the SEA includes Amargosa Creek and a portion of its watershed at the base of the south-facing slopes, and a segment of Anaverde Creek and watershed located in Anaverde Valley. These creeks support a variety of riparian communities.

The final portion of the SEA occurs as a separate unit at its eastern end. It includes Palmdale Lake, Una Lake, and Barrel Springs. The upland portions of this area are vegetated with a desert scrub community with scattered Joshua trees. The lower areas consist of open water ponds, cattail ponds, riparian woodlands, and other wetland communities.

Vegetation

Due to its unique location and the large variation in elevation and topography, vegetation within the San Andreas SEA is extremely diverse. The SEA includes arid desert communities, foothill woodland communities, high elevation pinon and chaparral communities, sag pond wetlands, desert and montane riparian communities, as well as grasslands and wildflower fields. In addition, the transition zones between these communities produce unusual species compositions. Sensitive plant species occurring or potentially occurring within the SEA are discussed below in the Sensitive Biological Resources section.

Plant communities within the SEA were classified using standard methodology and terminology. Most of the communities discussed correspond directly with those listed in Holland's Preliminary Descriptions of the Terrestrial Natural Communities of California (1986 and 1992 update). Other communities are named based on dominant species within community boundaries and/or commonly used terminology. Descriptions and general locations of each plant community present within the SEA are presented below.

- Desert scrub: Is a moderately tall, fairly open shrubland with several species contributing to the canopy. Dominants often include Great Basin sage brush, antelope bush, saltbush, and/or rabbitbrush with several perennial grasses dispersed between the shrubs. Within the SEA, this community often inter-grades with juniper woodlands and Joshua tree woodlands. Desert scrub is also found on lower slopes within the San Andreas SEA, on north facing slopes that transition onto the Valley floor, and on the Buttes and adjacent valley floor interspersed with grasslands.
- Chaparral: The chaparral community consists of a mixture of broad-leafed, needle-leafed, sclerophyllous (hard-leafed) shrubs of medium to tall height. These shrubs form a dense cover on steep slopes below 5,000 feet in Southern California. Dominant species found within this community include chamise, manzanita, California lilac, laurel sumac, toyon, and both western mountain-mahogany and desert mountain-mahogany. This plant community occupies most of the higher elevations within the SEA and is frequently interspersed with scrub and woodlands.

- Grassland: Non-native grassland consists predominantly of invasive annual grasses that are primarily of Mediterranean origin. Dominant species found within this community include slender oats, wild oats, ripgut brome, foxtail chess, wild mustard, red-stemmed filaree, Mediterranean schismus, and golden tops. Native grassland consists of at least ten percent cover of native purple needlegrass, desert needlegrass species, and native forbs with the remaining coverage similar to non-native grasslands. A few small patches of native grassland can be found scattered throughout the SEA. The larger extents of native grasslands are mixed with non-native grasslands in more significant acreage on and surrounding the Buttes and on south facing slopes of the Tehachapi mountains at the western end of the SEA. Some areas of native grassland, such as those surrounding the Buttes, support a high density of wildflowers and are often referred to as wildflower fields. A characteristic of these grasslands or prairies is the substantial variation in amount of wildflowers displayed from year to year, which relates directly to high variability in amount and timing of rainfall.
- Wildflower fields: Are areas with an amorphous mix of herbaceous plants noted for conspicuous annual flower displays. Dominance varies from site to site and from year to year at any one particular site. These areas might be termed “grasslands” in years with little display. Species frequently present include California poppy, tidy tips, dove lupine, valley tassels, purple owl’s clover, and broad-leaved gilia. Within the SEA, prominent wildflower fields occur on the south facing slopes of the Tehachapi Mountains and at the Buttes.
- Southern willow scrub: Is a riparian community consisting of dense, broad-leaved, winter-deciduous riparian thickets occurring within and adjacent to water courses. The dominant species of this community within the SEA are arroyo willow, red willow, and black willow. This community occurs in segments along portions of many of the drainages as well as the periphery of many of the ponds and lakes in the eastern half of the SEA.
- Foothill woodland: Is a broad community designation encompassing the tree-dominated plant communities occurring transitionally between grasslands and montane chaparral or bigcone spruce-canyon oak woodland. Dominant tree species include interior live oak, blue oak, valley oak, and foothill pine. Foothill woodland occupies much of the western extent of the SEA.
- Joshua tree woodland: Is an open woodland, usually with Joshua trees as the only arborescent species, and numerous smaller shrub species filling the space between Joshua trees. Shrub species include Great Basin sagebrush, rabbitbrush, creosote bush, and cheese bush. Joshua tree woodland is present on the lower slopes in the eastern half of the SEA.
- Juniper woodland: Is an extremely open woodland dominated by California juniper, with an understory typical of desert scrub as described above. The majority of this community is found only on lower slopes in the eastern half of the SEA, often intermingling with Joshua tree woodland and chaparral communities.
- Valley oak woodland: Is an open woodland community dominated by valley oak. The understory is a grassy savannah composed mostly of non-native grasses. Valley oak woodland occurs on north-facing slopes of Liebre Mountain near the western extent of the SEA.
- Bigcone spruce-canyon oak woodland: Is a dense woodland with a mix of dominant tree species. Canyon oak forms a broken canopy with bigcone spruce and California black oak; foothill pine is usually scattered among these. Areas not underneath the canopy are usually dominated by chaparral species such as scrub oak, manzanita, and California lilac. This community occupies most of the higher elevation slopes within the SEA.

- Southern cottonwood-willow riparian forest: Is an open broad-leaved winter-deciduous riparian forest dominated by Fremont cottonwood, black cottonwood, black willow, and red willow. The southern cottonwood-willow riparian forest within the SEA occupies short segments of Amargosa Creek as well as the periphery of several lakes and ponds.
- Freshwater marsh: Develops in areas of still or slow-moving permanent freshwater. This community is dominated by perennial cattails, which reach a height of 2-3 meters and often form a closed canopy. Bulrushes are dominant below the cattail canopy. Freshwater marsh occurs in small patches along Amargosa Creek and other wetland areas scattered along the San Andreas Fault Zone.
- Alkali marsh: Is similar to the freshwater marsh described above but with more salt-tolerant hydrophytes present. Species associated with this community include cattails, *Carex* spp. *Juncus cooperi*, saltgrass, *Nitrophila occidentalis*, *Scirpus nevadensis*, and common reed. Alkali marsh occurs in small segments along Amargosa Creek and other wetland areas scattered along the San Andreas Fault Zone.
- Alluvial wash vegetation: Also known as floodplain sage scrub, alluvial wash vegetation includes phreatophytic trees (a plant type that obtains water from the water table via a long taproot) and upland shrubs that occur in infrequently flooded and scoured habitats such as flood plains, or seasonal streams. The dominant shrub is scalebroom with Great Basin sage brush, rabbitbrush, sweetbush, and chaparral yucca. Alluvial wash is distributed in larger water courses such as upper Amargosa Creek, Myrick Canyon Wash, Willow Springs Wash and other drainages located throughout the SEA.
- Ruderal vegetation: Disturbed or barren areas either completely lack vegetation or are dominated by ruderal species. Ruderal vegetation typically found within the SEA includes non-native grasses and weedy herbaceous species, native and non-native, including mustards, telegraph weed, Russian thistle, dock, yellow star thistle, Australian saltbush, and cocklebur. Several disturbed areas occur scattered throughout the SEA and take the form of residential developments, paved roads, fire breaks, dirt access roads, trails, and other similarly disturbed areas.

Wildlife

Wildlife within the SEA is diverse and abundant due to the large acreage of natural open space and the diversity of habitat types. While a few wildlife species are entirely dependent on a single vegetative community, the entire mosaic of all the vegetation communities within the area and adjoining areas constitutes a functional ecosystem; this ecosystem contains a variety of wildlife species, both within the SEA and as part of the regional ecosystem.

Analysis of invertebrates on any given site generally is limited by a lack of specific data; however, the size of the SEA and diversity of habitats present is considered sufficient to encompass healthy populations of a large number of invertebrate species. The wetlands and aquatic habitats within the SEA support diverse faunas of freshwater and alkaline pool arthropods, including native fairy shrimp, brine flies, and tiger beetles. Insect orders are particularly well-represented taxonomically, with moderate levels of species endemism including Coleoptera, Diptera, Hymenoptera and nocturnal Lepidoptera.

Amphibian populations are generally scarce in desert habitats but may be particularly abundant where desert riparian areas occur. The SEA supports a variety of amphibians within wetland areas along the San Andreas Fault Zone and the moister woodland areas and canyon bottoms of the

mountains. Many essential reptilian habitat characteristics are present within the SEA. These include open habitats that allow free movement and high visibility and small mammal burrows for cover and escape from predators and extreme weather. These characteristics as well as a diversity of habitat types support a diverse reptilian fauna.

The scrubland, woodland, riparian, and grassland habitats in the SEA provide foraging and cover habitat for year-round residents, seasonal residents, and migrating song birds. In addition, the SEA encompasses many year-round water sources and abundant raptor foraging, perching, and nesting habitat. The combination of these resources, as well as the confluence of many community types support an unusually high diversity of bird species. Not unlike other taxonomic groups, small and large mammal populations within the SEA are diverse and reflective of the unique confluence of several habitat types.

- **Wildlife Movement:** The San Andreas SEA includes several important linkages for wildlife movement. The Fault Zone connects with the Santa Clara River drainage in the Lake Hughes area, linking with this large, free-flowing watershed that extends to the Pacific Ocean in Ventura County. The foothills and grassland in the westernmost tip of the SEA are part of an important linkage between the San Gabriel Mountains and the Tehachapi Mountains. This linkage to the Tehachapi Mountains is important because it connects the southernmost extent of the Sierra Nevada Mountains with the San Gabriel Mountains and with the southern Coast Ranges. The Tehachapi Mountains are the only mountain linkage between the Transverse Ranges and the southern Coast Ranges to the Sierra Nevada Range. This largely natural area may be an important topographic reference for migrating birds and bats, as well as functioning for essential high elevation foraging grounds along their migration route. The Tehachapi Mountains further provide a valuable link for gene flow between divergent populations of many species, including plants. The SEA includes several large drainages that extend from the San Gabriel Mountains to the western end of the Mojave Desert: the Antelope Valley floor and the Fairmont and Antelope Buttes. These washes provide an important linkage for animals traveling between the mountains (all the ranges mentioned above) and the Mojave Desert. In addition, Amargosa Creek facilitates east-west wildlife movement through Liebre Mountain, Portal Ridge, and Ritter Ridge to Barrel Springs in the Antelope Valley near Palmdale. The frequency of valuable riparian communities along this travel route located within an otherwise arid climate, further indicates the importance of this area, which is one of the busiest natural wildlife linkages in the region.

Sensitive Biological Resources

Sensitive biological resources are habitats for individual species that have special recognition by federal, state, or local conservation agencies and organizations as endangered, threatened, rare, or otherwise sensitive due to the species' declining or limited distribution or population sizes, usually resulting from habitat loss. Watch lists of such resources are maintained by the California Department of Fish and Game (CDFG), the United States Fish and Wildlife Service (USFWS), and special groups such as the California Native Plant Society (CNPS). The following sections indicate the habitats as well as plant and animal species present, or potentially present within the SEA, that have been afforded special recognition.

- **Sensitive Plant Communities/Habitats:** This report/description supports several habitat types considered sensitive by resource agencies, namely the CDFG [California Natural Diversity Database (CNDDDB)], because of their scarcity and support of a number of state and federally listed endangered, threatened, and rare vascular plants, as well as several sensitive bird and reptile species. These communities include: Joshua Tree Woodland, Valley Oak Woodland, Native Grassland, Wildflower Field Southern Cottonwood-willow Riparian Forest, Freshwater

Marsh, Alkali Marsh, Alluvial Wash, and Southern Willow Scrub, which occur throughout the area. These communities or closely related designations are considered highest-inventory priority communities by the CDFG, indicating that they are experiencing a decline throughout their range.

- Sensitive Species: Sensitive species include those listed, or candidates for listing by the USFWS, CDFG, and CNPS. These species include, but are not limited to, Nevin's barberry, short-joint beavertail, Pierson's morning glory, alkali mariposa lily, California red-legged frog, southwestern pond turtle, California horned lizard, coast patch-nosed snake, two-striped garter snake, merlin, prairie falcon, mountain plover, burrowing owl, California spotted owl, southwestern willow flycatcher, California condor, Mojave ground squirrel, and southern grasshopper mouse. In addition, the SEA identifies other species observed, recorded in the CNDDDB, or reported in previous documentation as observed within or in the immediate vicinity of the SEA.

San Dimas Canyon/San Antonio Wash SEA

The San Dimas Canyon/San Antonio Wash Significant Ecological Area (SEA) is located along the cismontane foothills of the eastern San Gabriel Mountains. Generally, the SEA is centered on the mouths of four major canyons, which flow from the mountains and interconnecting terrain. From east to west these canyons include: San Antonio Canyon above the City of Claremont as one component; and Live Oak, Marshall, and San Dimas Canyons above the cities of La Verne and San Dimas as a second component.

The San Dimas Canyon/San Antonio Wash SEA is comprised of two component parts. The San Dimas Canyon component includes portions of Live Oak, Marshall, and San Dimas Canyons. The smaller component, San Antonio Canyon, encompasses the San Antonio Canyon alluvial outwash.

In general, the topography of the SEA is severe, consisting of steep-walled canyons and narrow ridgelines. Elevations range from a high of approximately 3,000 feet above mean sea level (MSL) along the ridges of San Dimas Canyon, to a low of approximately 451 feet above MSL in San Antonio Wash. Several major drainages and numerous tributaries exit the San Gabriel Mountains through this SEA.

The wide range of elevation, topography, slope aspect, and geology represent a wide array of physical habitats within this SEA. Consequently, a number of plant communities exist, including grasslands, riparian, shrublands, woodlands, and forests. Within these major community types, there are many sub-communities, which vary according to plant species dominance. Of particular note, this area contains the last remaining relatively well-developed lower montane riparian habitats in the eastern county and dammed drainages have created significant reservoirs or flood control basins in San Antonio and San Dimas.

Vegetation

The variety of topography, soil types, slope aspects and water availability within the San Dimas Canyon/San Antonio Wash SEA creates a range of physical habitats, which support numerous plant species. Sensitive plant species occurring or potentially occurring within the SEA are discussed below in the Sensitive Biological Resources section. Many of these species, although often different in their growth form, prefer similar habitat characteristics and are often found in recurring assemblages to form plant communities. Ten major plant communities are found within the San Dimas Canyon/San Antonio Wash SEA. Plant communities within the SEA were classified using standard methodology and terminology. Most of the communities discussed correspond directly with

those listed in Holland's Preliminary Descriptions of the Terrestrial Natural Communities of California (1986 and 1992 update). Other communities are named based on dominant species within them and/or commonly used terminology.

- Bigcone spruce-canyon oak forest: Is an open to dense forest dominated by bigcone spruce 50 to 80 feet tall over a dense canopy of canyon live oak. It is found scattered throughout the San Dimas Canyon component of this SEA on canyon sides at elevations generally above 2,500 feet where it occupies rocky substrates. It commonly occurs in fairly small enclaves within chaparral.
- White alder riparian forest: Along the lower reaches of San Dimas Canyon, white alder riparian forest is found. This community is dominated by white alder, which grow 30 to 40 feet high over a shrub understory. It typically grows along streams in bedrock-constrained, steep-sided canyons, resulting in a fairly narrow riparian corridor.
- Alluvial fan scrub: Is a shrub community characterized by harsh substrates subject to episodic flooding and scouring. It is generally restricted to broad canyon outwashes, or alluvial washes. It is found in this SEA at the San Antonio Canyon mouth, where it forms an open shrub vegetation within areas of bare, scoured ground in between.
- Oak woodland: Is a plant community dominated by species of the genus *Quercus*. Within this SEA this community includes coast live oak, which typically grows to heights of 20 to 40 feet and the somewhat smaller interior live oak and canyon oak, and forms either closed or open tree canopies. Understory vegetation varies from grassland in level areas to shrubs where topography is steeper. It may also inter-grade with shrub communities. This community is scattered throughout the SEA and most prevalent on north-facing slopes and in drainage bottoms.
- Oak riparian forest: A highly related community found in the San Dimas Canyon/San Antonio Wash SEA is oak riparian forest. This community is also dominated by coast live oak (canyon oaks at higher elevations). The primary difference between oak woodland and oak riparian forest is the greater availability of water in riparian situations, which is expressed in a denser tree canopy cover and higher density of trees. There are also a greater number of hydrophytic (water favoring) plant species in the understory. Typical riparian trees such as western sycamore and willow occasionally occur as well. Oak riparian forest is best developed within broader, more level gradient drainages of this SEA.
- Walnut woodland: Often intergrades with oak dominated woodlands or develops as a distinct community. This community is dominated by the California walnut, which grows 10 to 30 feet high. More often than not, walnut woodland in this SEA is highly intermixed with oak woodland and chaparral and large monotypic stands are uncommon.
- Southern willow scrub: Is found along widely scattered reaches of several drainages throughout this SEA. This community is dominated by species of willow which form nearly monotypic stands due to their dense growth with an occasional cottonwood. These stands generally reach 10 to 20 feet in height with little understory vegetation.
- Chaparral: Is a shrub community composed of robust species. Within this SEA a number of chaparral sub-communities are found according to their dominant plant species. These include chamise, buck brush, ceanothus, scrub oak, interior live oak and even mosaics of these depending on mixes of species and elevation. These and other shrub species form dense vegetation covers growing five to 10 feet in height. The development of chaparral is

pronounced over large hillside areas throughout both components of the SEA.

- Coastal sage scrub: A shrubland community exhibiting less robust structure found in this SEA is coastal sage scrub. This plant community is dominated by California sagebrush, California encelia, white sage, black sage, and California buckwheat. It also forms dense stands, which grow three to four feet in height. Within this SEA it is generally found in scattered patches, which are highly integrated with mixed chaparral. These are primarily located in the lower elevation hillsides of both SEA components.
- Non-native grassland: Is dominated by non-native annual grasses and forbs. These opportunistically growing species include brome grasses, wild oats and mustards. Characteristic of other parts of Southern California, this community became established as a result of livestock grazing and agriculture, as native vegetation is removed, sometimes by mechanical means, and replaced by more adventitious species. Non-native grassland is found throughout the SEA.

Wildlife

Wildlife populations within the San Dimas Canyon/San Antonio Wash SEA are diverse and abundant due to the region's physiographic diversity, its relative isolation, and its location within and adjacent to the Angeles National Forest. Analysis of invertebrates on any given site generally is limited by a lack of specific data; however, the size of the SEA and diversity of habitats present is considered sufficient to encompass healthy populations of a large number of invertebrate species. Fair numbers of amphibians are expected to be present primarily due to the aquatic and semi-aquatic habitats provided within the numerous drainages and several reservoirs. Reptile abundance and diversity are expected to be characteristic for the habitats present, although areas closer to urban development along the southern boundaries of this SEA are likely to be suppressed due to edge effect.

Bird use, diversity, and abundance within the San Dimas Canyon/San Antonio Wash SEA are expected to be high for several reasons. In general, this SEA provides habitat for a wide range of shrubland, woodland, forest, and riparian species that occur at varying elevations. In particular, the riparian habitats found in drainages throughout this SEA provide essential habitat for riparian-obligate and riparian-favoring species. In addition, a number of migratory birds no doubt use this area to move across the northern portion of the Los Angeles Basin. These include a wide spectrum of birds including songbird, waterfowl, and raptorial species.

Similarly, the mammalian fauna is expected to be very diverse and abundant. Perhaps, more influential on this taxa than the diversity of habitats is the inclusion of this SEA within and adjacent to the vast open space of the Angeles National Forest. Virtually all mammalian species found in the forest (with the exception of bighorn sheep) are expected to be found in this SEA. Frequent observations of black bear and mountain lion in foothill communities attest to the range of species expected.

- Wildlife Movement: Wildlife movement within the San Dimas Canyon/San Antonio Wash SEA takes on two major forms. First, due to the extreme intervening topography it is logical to expect considerable movement of wildlife up and down the many sizeable drainages, which course through this SEA and connect the forest interior with foothill areas. In large part, the larger the watershed of the drainages, the greater the volume of movement. Consequently, this type of movement occurs on a seasonal and more frequent basis, particularly for large mobile mammals whose full range of habitat needs are typically met over broad areas.

The second major type of movement occurs across the flanks of the foothills and lower mountains, in an east-west direction. Particularly for riparian-favoring migratory birds, a corridor linking lower elevational riparian habitats in the San Dimas Canyon/San Antonio Wash SEA is expected to be of high use and importance. In addition to providing essential habitat for resident riparian birds, this SEA contains some of the best developed riparian habitat for birds, which are seasonal visitors to cismontane foothills.

Sensitive Biological Resources

Sensitive biological resources are habitats or individual species that have been given special recognition by federal, state, or local conservation agencies and organizations as endangered, threatened, rare, or otherwise sensitive. This is principally due to the species' declining or limited distribution or population sizes, usually resulting from habitat loss. Watch lists of such resources are maintained by the California Department of Fish and Game (CDFG), the United States Fish and Wildlife Service (USFWS), and special groups such as the California Native Plant Society (CNPS). The following sections indicate the habitats as well as plant and animal species present, or potentially present within the San Dimas Canyon/San Antonio Wash SEA, that have been afforded special recognition.

- **Sensitive Plant Communities/Habitats:** This report/description supports several habitat types considered sensitive by resource agencies, namely the CDFG [California Natural Diversity Database (CNDDDB)], because of their scarcity and provision of habitat for a number of state and federally listed endangered, threatened, and rare vascular plants, as well as several sensitive bird and reptile species. These communities include oak riparian woodland, walnut woodland, southern willow scrub, coastal sage scrub and alluvial fan scrub, which occur throughout the area. These communities, or closely related designations, are considered highest-inventory priority communities by the CDFG, indicating that they are experiencing a decline throughout their range.
- **Sensitive Species:** Sensitive species include those listed, or candidates for listing by the USFWS, CDFG, and CNPS. These species include, but are not limited to, Nevin's barberry, San Gabriel River dudleya, San Gabriel Mountains dudleya, Braunton's milk vetch, San Gabriel bedstraw, thread-leaved brodiaea, lemon lily, Santa Ana sucker, southwestern pond turtle, two-striped garter snake, and yellow warbler. In addition, the SEA identifies other species observed, recorded in the CNDDDB, or reported in previous documentation as observed within or in the immediate vicinity of the SEA.

San Gabriel Canyon SEA

The San Gabriel Canyon Significant Ecological Area (SEA) is located along the eastern half of the cismontane foothills. Generally, the SEA is centered on the mouths of three major canyons, which flow from the mountains and the interconnecting terrain in between. From east to west these canyons include: San Gabriel, Sawpit, and Santa Anita Canyon located above the cities of Azusa, Duarte, Monrovia, Arcadia, and Sierra Madre.

The San Gabriel Canyon SEA is comprised of three major canyons, San Gabriel, Sawpit, and Santa Anita. In general, the topography of the SEA is severe, consisting of steep-walled canyons and narrow ridgelines. Elevations range from a high of approximately 5,710 feet above mean sea level (MSL) at Mount Wilson, to a low of approximately 660 feet above MSL in San Gabriel Canyon. Several major drainages and numerous tributaries exit the San Gabriel Mountains through this SEA.

The wide range of elevation, topography, slope aspect, and geology represent a wide array of

physical habitats within this SEA. Consequently, a number of plant communities exist, including grasslands, riparian, shrublands, woodlands, and forests. Within these major community types, there are many sub-communities, which vary according to plant species dominance. Of particular note, this SEA contains the last remaining relatively well-developed lower montane riparian habitats in the eastern County. In addition, enclaves of two sensitive plant species are found here.

Vegetation

The variety of topography, soil types, slope aspects and water availability within the San Gabriel Canyon SEA creates a range of physical habitats, which support numerous plant species. Sensitive plant species occurring or potentially occurring within the SEA are discussed below in the Sensitive Biological Resources section. Many of these species, although often different in their growth form, prefer similar habitat characteristics and are often found in recurring assemblages to form plant communities. Ten major plant communities are found within the San Gabriel Canyon SEA. Plant communities within the SEA were classified using standard methodology and terminology. Most of the communities correspond directly with those listed in Holland's Preliminary Descriptions of the Terrestrial Natural Communities of California (1986 and 1992 update). Other communities are named based on dominant species within them and/or commonly used terminology.

- Bigcone spruce/canyon oak forest: Is an open dense forest dominated by bigcone spruce 50 to 80 feet tall over a dense canopy of canyon live oak. It is found scattered throughout the SEA on canyon sides at elevations generally above 2,500 feet where it occupies rocky substrates. It commonly occurs in fairly small enclaves within chaparral.
- White alder riparian forest: Along the upper reaches of many drainages in the SEA, white alder riparian forest is found. This community is dominated by white alder, which grow 30 to 40 feet high over a shrub understory. It typically grows along streams in bedrock-constrained, steep-sided canyons, resulting in a fairly narrow riparian corridor.
- Alluvial fan scrub: Is a shrub community characterized by harsh substrates subject to episodic flooding and scouring. It is generally restricted to broad canyon outwashes, or alluvial washes. It is found in this SEA at the San Gabriel Canyon mouth where it forms an open shrub vegetation with areas of bare, scoured ground in between.
- Oak woodland: Is a plant community dominated by species of the genus *Quercus*. Within this SEA this community includes coast live oak, which typically grows to heights of 20 to 40 feet and the somewhat smaller interior live oak and canyon oak, and forms either closed or open tree canopies. Understory vegetation varies from grassland in level areas to shrubs where topography is steeper. It may also intergrade with shrub communities. Within this SEA, oak woodland is scattered throughout and most prevalent on north-facing slopes and in drainage bottoms.
- Oak riparian forest: A highly related community found in the SEA is oak riparian forest. This community is also dominated by coast live oak (canyon oak at higher elevations). The primary difference between oak woodland and oak riparian forest is the greater availability of water in riparian situations, which is expressed in a denser tree canopy and higher density of trees. There are also a greater number of hydrophytic (water favoring) plant species in the understory. Typical riparian trees such as western sycamore and willow occasionally occur as well. Oak riparian forest is best developed within broader, more level gradient drainages of this SEA.
- Walnut woodland: Often intergrades with oak dominated woodlands or develops as a distinct

community. This community is dominated by the California walnut, which grows 10 to 30 feet high. More often than not, walnut woodland in this SEA is highly intermixed with oak woodland and chaparral and large monotypic stands are uncommon.

- Southern willow scrubs: Found along widely scattered reaches of several drainages throughout this SEA. This community is dominated by species of willow which form nearly monotypic stands due to their dense growth with an occasional cottonwood. These stands generally reach 10 to 20 feet in height with little understory vegetation.
- Chaparral: Is a shrub community composed of robust species. Within this SEA a number of chaparral sub-communities are found according to their dominant plant species. These include chamise, buck brush, ceanothus, scrub oak, interior live oak and mosaics of these depending on mixes of species and elevation. These and other shrub species form dense vegetation covers growing five to ten feet in height. The development of chaparral is pronounced over large hillside areas throughout the SEA.
- Coastal sage scrub: A shrubland community exhibiting less robust structure found in this SEA is coastal sage scrub. This plant community is dominated by California sagebrush, California encelia, white sage, black sage, and California buckwheat. It also forms dense stands, which grow three to four feet in height. Within this SEA it is generally found in scattered patches, which are highly integrated with mixed chaparral. These are primarily located in the lower elevation hillsides of the SEA.
- Non-native grassland is dominated by non-native annual grasses and forbs. These opportunistically growing species include brome grasses, wild oats and mustards. Characteristic of other parts of Southern California, this community became established as a result of livestock grazing and agriculture, as native vegetation is removed, (sometimes by mechanical means), and replaced by more adventitious species. Non-native grassland is found throughout the SEA.

Wildlife

Wildlife populations within the San Gabriel Canyon SEA are diverse and abundant due to the region's physiographic diversity, its relative isolation, and its location within and adjacent to the Angeles National Forest. The analysis of invertebrates is severely limited due to the lack of specific data, however, the SEA is likely to support healthy populations of a diverse assortment of invertebrate species based on the its undisturbed nature and variety of habitats. Fair numbers of amphibians are expected to be present primarily due to the aquatic and semi-aquatic habitats provided within the numerous drainages and several reservoirs. Reptile abundance and diversity are expected to be characteristic for the habitats present, although areas closer to urban development along the southern boundaries of this SEA are likely to be suppressed due to edge effect.

Bird use, diversity, and abundance within the San Gabriel Canyon SEA is expected to be high for several reasons. In general, this SEA provides habitat for a wide range of shrubland, woodland, forest, and riparian species that occur at varying elevations. In particular, the riparian habitats found in drainages throughout this SEA provide essential habitat for riparian obligate and riparian favoring species. In addition, a number of migratory birds no doubt use this area to move across the northern portion of the Los Angeles Basin. These include a wide spectrum of birds including songbird, waterfowl, and raptorial species.

Similarly, the mammalian fauna is expected to be very diverse and abundant. Perhaps, more influential on this taxa than the diversity of habitats is the inclusion of this SEA within and adjacent to

the vast open space of the Angeles National Forest. Virtually all mammalian species found in the forest (with the exception of bighorn sheep) are expected to be found in this SEA. Frequent observations of black bear and mountain lion in foothill communities attest to the wide range of species expected.

- **Wildlife Movement:** Wildlife movement within the San Gabriel Canyon SEA takes on two major forms. First, due to extreme intervening topography it is logical to expect considerable movement of wildlife up and down the many sizeable drainages that course through this SEA to connect the forest interior with foothill areas. In large part, the larger watershed of the drainages, the greater the volume of movement. Consequently, this type of movement occurs on a seasonal and more frequent basis, particularly for large mobile mammals whose full range of habitat needs are typically met over broad areas.

The second major type of movement occurs across the flanks of the foothills and lower mountains, in an east-west direction. Particularly for riparian-favoring migratory birds, a corridor linking lower elevational riparian habitats in the San Gabriel Canyon SEA is of high use and importance. In addition to providing essential habitat for resident riparian birds, this SEA contains some of the best developed riparian habitat for birds that are seasonal visitors to the cismontane foothills.

Sensitive Biological Resources

Sensitive biological resources are habitats or individual species that have been given special recognition by federal, state, or local conservation agencies and organizations as endangered, threatened, rare, or otherwise sensitive; this is principally due to the species' declining or limited distribution or population sizes, usually resulting from habitat loss. Watch lists of such resources are maintained by the California Department of Fish and Game (CDFG), the United States Fish and Wildlife Service (USFWS), and special groups such as the California Native Plant Society (CNPS). The following sections indicate the habitats as well as plant and animal species present, or potentially present within the San Gabriel Canyon SEA, that have been afforded special recognition.

- **Sensitive Plant Communities/Habitats:** The San Gabriel Canyon SEA supports several habitat types considered sensitive by resource agencies, namely the CDFG [California Natural Diversity Database (CNDDDB)], because of their scarcity and their being habitat for a number of state and federally listed endangered, threatened, and rare vascular plants, as well as several sensitive bird and reptile species.

These communities include: oak riparian woodland, walnut woodland, southern willow scrub, coastal sage scrub and alluvial fan scrub. These communities, or closely related designations, are considered highest-inventory priority communities by the CDFG, indicating that they are experiencing a decline throughout their range.

- **Sensitive Species:** Sensitive species include those listed, or candidates for listing by the USFWS, CDFG, and CNPS. These species include, but are not limited to, Nevin's barberry, Braunton's milkvetch, Mexican flannelbrush, thread-leaved brodiaea, Santa Ana sucker, southwestern pond turtle, southern rubber boa, San Diego mountain kingsnake, San Bernardino mountain kingsnake, golden eagle, California gnatcatcher, least Bell's vireo, San Diego desert woodrat, and ringtail cat. In addition, the SEA identifies other species observed, recorded in the CNDDDB, or reported in previous documentation as observed within or in the immediate vicinity of the SEA.

Santa Clara River SEA

The Santa Clara River Significant Ecological Area (SEA) encompasses the entire Los Angeles County reach of the Santa Clara River, primarily within unincorporated areas of Los Angeles County. The Santa Clara River SEA covers the length of the river and with the watershed extensions encompasses a wide variety of topographic features and habitat types. The orientation and extent of the SEA also consists of the surface and subsurface hydrology of the Santa Clara River, from its headwater tributaries and watershed basin to the point at which it exits Los Angeles County jurisdiction.

The eastern portion of the SEA surrounds the Kentucky Springs and Aliso Canyon watersheds, portions of which are within the Angeles National Forest. It follows the river channel downstream through the Acton basin, taking in Arrastre Creek, Mill Canyon and other side drainages and significant rock outcroppings, then stays within the channel to Agua Dulce Canyon, at which point the northern boundary loops around that watershed and includes Vasquez Rocks County Natural Area, and continues northwest to the forest, while the southern boundary encompasses the lower portion of Bear Canyon and undeveloped portions of Oak Spring Canyon adjacent to the river channel. The southern boundary leaves the river channel at the confluence with Sand Canyon and extends broadly to the south, to include all of the remaining natural areas of the Sand Canyon watershed, along with the major ridgeline, earthquake escarpment, grassland, and canyon habitat features and watersheds of Elsmere, Whitney, Placerita and Bear canyons.

From Sand Canyon west the SEA boundary remains close to the margins of the floodplain to the confluence with San Francisquito Canyon, wherein the northern boundary extends northward upstream on that drainage to the headwaters of San Francisquito Creek on the Angeles National Forest, then returns to the river channel and proceeds west to the confluence with Castaic Creek. From here, it extends north around the lower portion of Castaic Creek, embracing the riparian habitat areas around and above the confluence, with the boundaries of the SEA following the Santa Clara River channel to the Ventura County line. The biological and ecological functionality of the SEA is integrally linked to the river basin for its entire length, of course, so the biogeographic limits of the SEA would extend downstream through Los Angeles/Ventura County to its mouth at the Pacific Ocean, and encompass the significant tributary drainages (Piru Creek, Sespe Creek, Santa Paula Creek, Wheeler Creek, etc.).

The Kentucky Springs and Aliso Canyon watershed zones originate on National Forest land, in semi-arid chaparral and desert scrub habitat, but the drainages themselves support different formations of desert and interior riparian habitat, ranging from seasonal Great Basin sagebrush wash in Kentucky Springs to dense, mature, willow-cottonwood-sycamore woodlands over permanent streams in Aliso Canyon. The surrounding uplands in the basins support pinyon-juniper woodlands, chamise, mountain mahogany, and manzanita dominated chaparral formations, buckwheat scrub, and ruderal lands. Alluvial terraces within both drainages have been rather extensively cultivated for orchard crops or dryland agriculture, and in more recent years, rural and urban-type residential developments have encroached on the watersheds. Portions of the Aliso Canyon riparian woodlands have been encroached upon by rural development, but the upper portion of the drainage possesses excellent xeric cottonwood-sycamore riparian woodland. The alluvial plain formed along the southern margin of the river basin below these canyons supports intact, high diversity xeric alluvial fan sage scrub.

Downstream of the Acton basin the SEA encompasses the Arrastre Creek drainage, which is the type locality for the federally and state endangered unarmored three-spined stickleback fish, and also loops around the high, rounded rocky butte-like outcroppings on the north side of the river. These features, while only a minor part of the watershed of the river, provide important nesting,

roosting, and sheltering habitat values for bats, birds of prey, and other sensitive species foraging along the river corridor. Agua Dulce Canyon has a permanent stream and supports high quality riparian habitat formations from the confluence with the river to the intersection with the Antelope Valley Freeway; from that point north the riparian areas are fragmented, improving and maturing significantly where the creeks pass through Vasquez Rocks County Natural Area.

The alluvial terraces along the river channel as it enters the eastern portion of the Santa Clarita Valley support alluvial fan sage scrub, Great Basin sagebrush scrub, coast live oak woodland, and coastal sage scrub habitats. The alluvial fans of Oak Springs Canyon and Sand Canyon are important recharge grounds for the river aquifer; surface flows from both canyons presently entering the Santa Clara River basin through natural, unconfined channels. Recognizing the importance of this drainage, the SEA boundaries have been drawn to encompass the entire Sand Canyon-Bear Canyon watershed, most of which is within the National Forest. The major habitat linkage zones and watersheds between the river basin and the National Forest, and the protected areas of the county (Placerita Canyon Natural Area) have also been included within the SEA boundary. These canyons form a natural movement zone for wildlife moving across and through the western end of the San Gabriel range to the Santa Susana range and the Santa Clara River basin, and together encompass a spectrum of significant and unique habitat, vegetation and wildlife resources.

The segment of the Santa Clara River passing through the City of Santa Clarita is a dry channel except during seasonal runoff flows. Regardless of this condition, it supports relatively intact stands of alluvial sage scrub formations, riparian woodland, and southern riparian scrub. The dry zones are essential to the continued genetic isolation of the unarmored three-spined stickleback population in the upper reaches of the river.

San Francisquito Creek supports dense and mature southern riparian scrub and riparian woodland formations, along with small areas of freshwater marsh, providing essential wintering areas and resident habitat for waterfowl, wading birds, marshland birds, and a variety of other vertebrate species. After San Francisquito Creek passes from County land into the National Forest, the channel flows become less seasonal, and riparian resources expand and diversify.

Relatively vast areas of willow-cottonwood forest and southern riparian scrub occur west of San Francisquito Creek and within the junction zone of Castaic Creek and the Santa Clara River, supporting numerous sensitive species and providing multi-layered riparian habitat for a wide diversity of wildlife species, particularly birds of prey and riparian-obligate songbirds.

The Santa Clara River channel and its alluvial terraces and tributary creeks together form the single most important and natural value wildlife movement zone through Los Angeles County. Mobile species can enter the river basin anywhere along its length (outside of developed areas) and proceed in either direction without having to pass through narrow culverts or blind channels, with continuous vegetative cover and only short stretches of dry substrates. The overall drainage course provides a continuum of aquatic and terrestrial movement opportunities, shelter, forage, and resident habitat from the mouth of the river at Ventura to the Antelope Valley. The drainage course connects to both districts of the Angeles National Forest, and links together two large public resource preserves (Vasquez Rocks and Placerita Canyon Nature Preserve).

Vegetation

Plant communities within the SEA include: bigcone spruce-canyon oak forest, coast live oak woodland, coast live oak riparian forest, chaparral, coastal sage scrub, coastal sage scrub-chaparral mixed scrub, non-native and native grasslands, alluvial fan sage scrub, southern cottonwood-willow riparian woodland and forest, southern sycamore-alder woodland, southern willow scrub, vernal

pool, pinyon-juniper woodland, juniper woodland, and freshwater marsh. Transitional zones (ecotones) between these communities often contain unusual species compositions. Sensitive plant species occurring or potentially occurring within the SEA are discussed below in the Sensitive Biological Resources section.

Plant communities within the SEA were classified using standard methodology and terminology. Most of the communities discussed correspond directly with those listed in Holland's Preliminary Descriptions of the Terrestrial Natural Communities of California (1986 and 1992 update); some communities are named based upon the dominant species within them and/or other commonly used terminology. Descriptions and general locations of each plant community present within the SEA are given below.

- Bigcone spruce-canyon oak forest: Formations typically occur in higher elevation draws on north-facing slopes, and may have incense cedar, big-leaf maple, California bay, and other shade-loving species intermixed, depending upon slope orientation, substrates, and fire history. Understory vegetation usually is dominated by chaparral species such as scrub oak, poison oak, wild grape, and manzanita. This community occurs on watershed slopes in the eastern portion of the SEA, and in a few of the narrower, more mesic canyons along the southern side of Soledad Canyon.
- Coast live oak woodland: Consists of moderate-density overstory formations of coast live oak trees, usually on erosional plains along the margins of canyon bottoms and on lower slopes in chaparral and coastal sage scrub understory habitats. Mexican elderberry, chaparral currant, squawbush, and California peony are frequent in the understory. Extensive stands of this formation occur in Sand, Placerita, Bear, Whitney, Elsmere, and Soledad Canyons, and in unnamed tributary canyons to these drainages.
- Coast live oak riparian forest: Is a variation of coast live oak woodland wherein the canopy is more closely grown, and the trees occur in narrower formations along watercourses. Willow, California bay, mulefat, and other riparian species often occur in the understory.
- Juniper woodland: Is an open formation dominated by California juniper, often with an understory of foothill yucca, buckwheat, and other scrub species. This community is found on lower slopes within the eastern portion of the SEA and is mixed with a few Joshua trees and chaparral species in several places.
- Pinyon-juniper woodland: In the SEA, the pinyon-juniper woodland typically consists of a mixture of single-needle leaf pinyon pine and California juniper, with mountain mahogany, buckwheat, squawbush, foothill yucca, penstemons, and native grasses. This formation occurs on middle elevation north-facing slopes in the Kentucky Springs watershed, and sporadically along the same orientations south of Acton.
- Southern cottonwood-willow riparian woodland and forest: Is a broad-leaved winter- deciduous habitat dominated by Fremont cottonwood, in places mixed with black cottonwood, various species of willow, rarely an alder, and on drier sites, western sycamore. Southern cottonwood-willow riparian woodland (or forest) occurs in numerous reaches of the SEA, forming mature overstory habitat on the Santa Clara River, its main tributaries, oxbow ponds, and alluvial plains. Some of the most extensive formations occur just west of Acton, in upper Aliso Canyon, in lower San Francisquito Canyon, and from Santa Clarita to the Ventura County border. Large tracts of cottonwood-willow habitat occur in Ventura County as well.
- Southern sycamore-alder woodland: Is a formation which most often occurs on broad plains

with heavy alluvial substrates, often along narrow creeks and streams with high-energy, permanent flows within the SEA. Alders typically occur along the watercourse, while sycamores usually grow a bit further from the active flowing channel. This community is uncommon within the SEA, occurring only in the upper reaches of the watershed and in portions of Bear, Sand, and Placerita Canyons and to a lesser extent in Aliso Canyon.

- Southern willow scrub: Is a riparian community consisting of dense, broad-leafed, winter-deciduous riparian thickets occurring within and adjacent to seasonal or permanent water courses. The “scrub” formation generally is sub-mature, a state which often is maintained by frequent heavy over-flooding, and may attain woodland or forest stature if undisturbed for several decades. Dominant species of this community within the SEA are mulefat, sandbar willow, and arroyo willow. Within the SEA this community occurs throughout the tributary and primary drainages, wherever the habitat structure is maintained or repeatedly altered by frequent high water flows.
- Freshwater marsh: Develops in areas of still or slow-moving permanent freshwater. This community is dominated by the perennial, emergent cattail or bulrush, which may reach heights of 7 feet and grow dense enough to form a closed canopy. This formation occurs in scattered ponds and slow-flow portions of the river and tributaries within the SEA.
- Vernal pool systems: Are extremely rare in Los Angeles County and there are only two verified vernal pools currently recognized within the area; Cruzan Mesa and Plum Canyon. However, there is at least one small seasonal pond with typical vernal pool characteristics within the upper Placerita-Sand Canyon watershed break. This small pool is surrounded by coastal sage scrub, with a band of native needlegrass and melic grass on its fringes, and supports Riverside fairy shrimp and western spadefoot toad. It is considered a vernal pool by virtue of its habitat values and species unique to this type of seasonal formation.
- Chaparral: Consists of broad-leafed or needle-leafed, sclerophyllous (hard-leafed), medium height to tall shrubs that form a dense cover on steep slopes, usually below 5,000 feet in Southern California. Dominant species found within this community include scrub oaks (several species), chamise, manzanita, wild lilac, toyon, and western mountain-mahogany on north-facing exposures; buckwheat, foothill yucca, chamise, hoary-leaf lilac, black sage, and goldenbush on south-facing slopes. This plant community occupies most of the basin slopes along the Santa Clara River and on interior ridges and slopes within the watersheds and drainages west of Acton. Chaparral also occurs on some of the higher elevations of the eastern watershed portions of the SEA, where the shrubs frequently are interspersed as understory formations within oak and conifer woodlands.
- Coastal sage scrub and coastal sage scrub-chaparral mixed scrub: Are formations that typically occur on south or west-facing slopes within the western portion of the SEA. Some sites may be artifacts of fire frequency or occurrence, while other areas appear to be stable scrub communities. Dominant species typically are California sagebrush, purple sage, black sage, white sage, goldenbush, buckwheat, foothill yucca, California encelia, brittlebush, golden yarrow, chamise, hoary-leaf lilac, and a variety of annuals and bulbs. Excellent examples of coastal sage scrub occur in upper Placerita Canyon watershed and on the ridgeline to the north, along the Santa Clara River just east of Sand Canyon, and in San Francisquito Canyon.
- Alluvial fan sage scrub: Sometimes also known as floodplain sage scrub, generally consists of a mixture of shrubs, which colonize and persist within infrequently scoured and flooded terrain such as floodplains, alluvial plains, or along seasonal streams. The dominant shrub in most washes is scalebroom, but Great Basin sage brush, rabbitbrush, and foothill yucca also usually

occur in the habitat type, and may be dominant depending upon substrates and subsurface hydrology. This vegetation type is common throughout the alluvial plains and washes in the SEA, forming particularly high diversity stands along the southern margin of the river at Acton, on uplands east of the Sand Canyon confluence, along the dry reaches of the river in Santa Clarita, and in lower San Francisquito Canyon. Extensive stands of Great Basin sagebrush-dominated alluvial scrub occur around Acton and in the Kentucky Springs portion of the SEA.

- Grassland: Native grassland communities consist of low, herbaceous vegetation dominated by grasses, with native formations generally mixed with native bulbs and other herbaceous species, often intermixed with naturalized annual taxa. There are representatives of native grasslands scattered within the SEA, most notably patches of different needlegrass species and melic grasses on clay soils in Placerita Canyon, on slope wetlands and around oaks on the ridge north of Placerita, and on less-disturbed xeric slopes in the eastern portion of the SEA. Seeps in chaparral often support homogeneous stands of giant rye; other native grasses occur sporadically within most natural habitats along the Santa Clara River basin. Non-native grassland consists of invasive annual grasses that are primarily of Mediterranean origin. Dominant species within this “community,” which is a ruderal formation and not a true habitat or community, include oats, bromes, foxtail chess, and other grasses, along with wild mustards and other disturbance-favored “weedy” taxa. Non-native grasslands and other ruderal formations are the dominant understory on most disturbed substrates, particular grazed areas.
- Ruderal species: Disturbed or barren areas either completely lack vegetation or are dominated by ruderal species. Ruderal vegetation typically found within the SEA includes non-native and native grasses and “weedy” herbaceous species, including doveweed, mustards, wire lettuce, sow thistle, telegraph weed, Russian thistle, dock, yellow star thistle, Australian saltbush, and cocklebur. Disturbed areas occur throughout the SEA on fallow agricultural sites, disked fields, abandoned pastures, residential development, paved road margins, fire breaks, dirt access roads, trails, and other similarly disturbed areas.

Wildlife

Wildlife within the SEA is extremely diverse and abundant, commensurate with extensive acreages of natural open space and great diversity of habitat types, within the river channels and on the surrounding uplands. While a few wildlife species may be entirely dependent upon or obligate within a single vegetative community, the mosaic of vegetation communities within the area and adjoining uplands constitutes a continuum of functional ecosystems. These ecosystems support a wide variety of wildlife species, within the SEA boundaries and as a part of the regional ecosystem.

Analysis of invertebrates on any given site generally is limited by a lack of specific data, but the size of the SEA and diversity of habitats present are considered sufficient to support healthy populations of a very large number of invertebrate species, probably in excess of 2,500 species. The riparian formations, wetlands, and aquatic habitats within the SEA support diverse faunas of arthropods, including native fairy shrimp, crane flies, blackflies and other aquatic dipterans, stoneflies, caddisflies, and dobsonflies, water boatmen, giant water bugs, ground beetles, diving beetles, and tiger beetles. Terrestrial insects abound around riparian corridors and in scrub habitats, and are particularly abundant in oak-dominated habitats. Insect orders very well-represented taxonomically, and with some habitat specialization within the Santa Clara River SEA include Orthoptera, Neuroptera, Coleoptera, Diptera, Hymenoptera and Lepidoptera.

Amphibians are abundant and relatively diverse within moister woodland areas, along montane canyon bottoms, in riparian areas, and within surface water features of the SEA. The overall riparian systems of the Santa Clara River basin support abundant populations of Pacific and California

chorus frogs, western toad, western spadefoot toad, bullfrog, and African clawed frog (the latter two species are non-native), and in San Francisquito Canyon, California red-legged frog and southwestern arroyo toad. Arboreal, painted, and garden slender salamanders also are present within mesic habitats in the SEA.

Open scrub, chaparral and alluvial fan habitats support diverse reptile populations, and the overall herpetofauna of the SEA would encompass numerous lizard species, along with southwestern pond turtle in Agua Dulce and Bear canyons. Yucca night lizard, side-blotched lizard, western fence lizard, western skink, San Diego alligator lizard, coastal western whiptail, San Diego horned lizard, desert horned lizard, silvery legless lizard and San Diego desert banded gecko all would be expected within the SEA.

The SEA also supports a robust snake fauna, including western blind snake, coachwhip (“red racer”), chaparral whipsnake, coastal patch-nosed snake, California rosy boa, San Diego gopher snake, glossy snake, California kingsnake, mountain kingsnake, long-nosed snake, night snake, California lyre snake, California black-headed snake, two-striped garter snake, San Bernardino ring-necked snake, southern Pacific rattlesnake.

Bird diversity within the SEA is related to habitat opportunities for year-round residents, seasonal residents, migrating raptors, and song birds. Coastal sage scrub and chaparral host a suite of birds typical of such sites at lower elevations over most of the coastal slopes of Southern California. The most productive sites for resident coastal sage scrub and chaparral birds are around riparian and freshwater systems, which also attract large numbers of migrants during spring and fall. Coastal sage and chaparral birds resident or breeding within the SEA includes Southern California (ashy) rufous-crowned sparrow, Bell’s sparrow, black-chinned sparrow, lark sparrow, lazuli bunting, California gnatcatcher, California quail, greater roadrunner, spotted towhee, California towhee, California thrasher, phainopepla, northern mockingbird, and Anna’s, Costa’s, and black-chinned hummingbirds. Oak woodlands and riparian areas support many more species; notable species consist of the summer tanager, Bullock’s oriole, black-headed grosbeak, band-tailed pigeon, western wood pewee, several swallow species, western yellow-billed cuckoo, willow flycatcher, and least Bell’s vireo. Species associated with ruderal sites and grasslands include western meadowlark, California horned lark, and savannah and grasshopper sparrows. Birds of prey (including common migrants) observed within the SEA include red-shouldered hawk, red-tailed hawk, Cooper’s hawk, sharp-shinned hawk, Swainson’s hawk, merlin, American kestrel, northern harrier, white-tailed kite, prairie falcon, and golden eagle. Resident owl species within the SEA boundaries include barn owl, great horned owl, long eared owl, and California spotted owl.

Native mammal diversity within the SEA is considerable. These include bats (at least seven species), rodents (at least four species of deer mice, two species of woodrat, Beechey ground squirrel, western gray squirrel, and more), two types of rabbits and one hare, broad-handed mole, long-tailed weasel, American badger, spotted and striped skunks, raccoon, gray fox, bobcat, coyote, mountain lion, and mule deer. Black bear also occur within the SEA boundaries, at least occasionally, but the San Gabriel Mountains population was introduced for game use, and this species is not native within the SEA.

- **Wildlife Movement:** Historically (and prehistorically) the riparian corridor along the Santa Clara River has served as the primary east-west linkage between the Pacific coastline, coast ranges, interior ranges, high desert and southern Sierra (via the Tehachapi range). Animals moving through the Santa Clara drainage had unobstructed passage along the river and within the riparian systems between the coastal lowlands of Ventura and the Mojave Desert, with tributary routes extending south into the San Gabriel range, northward via Castaic, Bouquet and San Francisquito tributaries over the Transverse range and into the San Joaquin Valley,

west into the central coast ranges, or east through the Tehachapi mountains and into the southern Sierra Nevada. The present configuration of the tributary drainages has impinged upon connectivity from the Santa Clarita Valley to the north, but the Santa Clara River remains relatively intact and open. The SEA embraces the river corridor and the linkage zones considered essential to insuring connectivity and resource values within the historic movement zones for all of the wildlife species present within the Los Angeles County portion of the Santa Clara River.

Sensitive Biological Resources

Sensitive biological resources are habitats or individual species, which have been afforded special recognition by federal, state, or local conservation agencies and organizations as endangered, threatened, rare, or otherwise of concern; this is principally due to the species' declining or limited distribution or population sizes, usually resulting from habitat loss. Watch lists of such resources are maintained by the California Department of Fish and Game (CDFG), the United States Fish and Wildlife Service (USFWS), and special groups such as the California Native Plant Society (CNPS). The following sections indicate the habitats as well as plant and animal species present, or potentially present within the SEA, that have been afforded special recognition.

- **Sensitive Plant Communities/Habitats:** This report/description supports several habitat types considered sensitive by resource agencies, namely the CDFG [California Natural Diversity Database (CNDDDB)] because of their scarcity and support of a number of state and federally listed endangered, threatened, and rare vascular plants, as well as sensitive bird and reptile species. These communities include: bigcone spruce-canyon oak forest, coast live oak riparian forest, southern willow scrub, southern cottonwood-willow riparian woodland, sycamore-alder woodland, freshwater marsh, alluvial fan sage scrub, native grassland, and vernal pool. These communities or closely related designations are considered highest-inventory priority communities by the CDFG, indicating that they are declining in acreage throughout their range due to land use changes.
- **Sensitive Species:** Sensitive species include those listed, or candidates for listing by the USFWS, CDFG, and CNPS. These species include, but are not limited to, Nevin's barberry, spreading navarretia, slender-horned spineflower, California Orcutt grass, Riverside fairy shrimp, unarmored threespine stickleback, Santa Ana sucker, arroyo southwestern toad, California red-legged frog, southwestern pond turtle, California horned lizard, San Diego mountain king snake, two-striped garter snake, California condor, Swainson's hawk, White-tailed kite, California gnatcatcher, least Bell's vireo, and ringtail cat. In addition, the SEA identifies other species observed, recorded in the CNDDDB, or reported in previous documentation as observed within or in the immediate vicinity of the SEA.

Santa Felicia SEA

The Santa Felicia Significant Ecological Area (SEA) encompasses the almost the entire Los Angeles County portion of the Santa Felicia watershed draining into Lake Piru. This watershed is largely undeveloped and contains vast stands of intact coast sage scrub and chaparral communities on south and north facing slopes, respectively. In addition to the undisturbed upland habitats, the watershed is dissected by excellent examples of mixed riparian (sycamore-willow), oak riparian and coast live oak forests and alluvial scrub in the bottomlands. Non-native grasslands occur in areas where grazing has taken place; however, there is little invasion of these ruderal taxa into the native communities. A brief summary of the plant communities present, or likely to occur, within the SEA is provided in the vegetation section below.

The Santa Felicia SEA includes a wide variety of topographic features and habitat types. The orientation and extent of the SEA encompasses the surface and subsurface hydrology of the Santa Felicia watershed, from its headwater, tributaries, and basin to the point at which it exits Los Angeles County jurisdiction. The northern portion of the SEA is within the Angeles National Forest. Capturing the watershed tributaries, the eastern boundary follows a predominate ridgeline, the western boundary is the county border and the southern boundary captures two other small tributaries that feed the Santa Felicia, to encompass almost the entire watershed that ultimately drains into Lake Piru in Ventura County.

Vegetation

Plant communities within the SEA include: coast live oak woodland, coast live oak riparian forest, chaparral, coastal sage scrub, coastal sage scrub, chaparral, non-native and native grasslands, alluvial fan sage scrub, and sycamore-willow riparian woodland. Sensitive plant species occurring or potentially occurring within the SEA are discussed in the Sensitive Biological Resources section of this document.

Plant communities within the SEA were classified using standard methodology and terminology. Most of the communities discussed correspond directly with those listed in Holland's Preliminary Descriptions of the Terrestrial Natural Communities of California (1986 and 1992 update); some communities are named based upon the dominant species within them and/or other commonly used terminology. Descriptions of several plant communities present within the SEA are given below.

- Coast live oak woodland: Consists of moderate-density overstory formations of coast live oak trees, usually on erosional plains along the margins of canyon bottoms and on lower slopes in chaparral and coastal sage scrub understory habitats.
- Coast live oak riparian forest: Is a variation of coast live oak woodland wherein the canopy is more closely grown, and the trees occur in narrower formations along watercourses. Willow, California bay, mulefat, and other riparian species often occur in the understory.
- Sycamore-willow riparian woodland: May include the following: western sycamore, black willow, arroyo willow, skunkbush, and California blackberry.
- Alluvial fan scrub: Generally consists of a mixture of shrubs, including scalebroom, California buckwheat, and white sage, which colonize and persist within infrequently scoured and flooded terrain such as floodplains, alluvial plains, or along seasonal streams.
- Chaparral: Consists of broad-leafed or needle-leafed, sclerophyllous (hard-leafed), medium height to tall shrubs that form a dense cover on steep slopes, usually below 5,000 feet in Southern California. Dominant species found within this community include scrub oak, toyon, manzanita, and white sage.
- Coastal sage scrub: Dominant species typically are California sagebrush, purple sage, giant wildrye, coyotebush, and California buckwheat.
- Grassland: Non-native grassland consists of invasive annual grasses that are primarily of Mediterranean origin, including short-pod mustard, tocalote, and ripgut brome. Native grassland communities consist of low, herbaceous vegetation dominated by grasses, with native formations generally mixed with native bulbs and other herbaceous species, often intermixed with naturalized annual taxa.

Wildlife

Wildlife within the SEA is extremely diverse and abundant, commensurate with extensive acreages of natural open space and great diversity of habitat types, within the stream channels and on the surrounding uplands. While a few wildlife species may be entirely dependent upon or obligate within a single vegetative community, the mosaic of vegetation communities within the area and adjoining uplands constitutes a continuum of functional ecosystems. These ecosystems support a wide variety of wildlife species, within the SEA boundaries and as a part of the regional ecosystem.

Analysis of invertebrates on any given site generally is limited by a lack of specific data, but the size of the SEA and diversity of habitats present are considered sufficient to support healthy populations of a very large number of invertebrate species. The riparian formations and aquatic habitats within the SEA support diverse faunas of arthropods, which may include native fairy shrimp, crane flies, blackflies and other aquatic dipterans, stoneflies, caddisflies, and dobsonflies, water boatmen, giant water bugs, ground beetles, diving beetles, and tiger beetles. Terrestrial insects abound around riparian corridors and in scrub habitats, and are particularly abundant in oak-dominated habitats.

Amphibians are abundant and relatively diverse within moister woodland areas, along montane canyon bottoms, in riparian areas, and within surface water features of the SEA. The overall riparian systems of the SEA provide habitat for a number of frog and toad populations, which may include populations of Pacific and California chorus frogs, western toad, and western spadefoot toad as well as the California red-legged frog and southwestern Arroyo toad. Open scrub, chaparral and alluvial fan habitats support diverse reptile populations, and the overall herpetofauna of the SEA would encompass numerous lizard species as well as a robust snake fauna.

Bird diversity within the SEA is related to habitat opportunities for year-round residents, seasonal residents, migrating raptors, and song birds. Coastal sage scrub and chaparral host a suite of birds typical of such sites at lower elevations over most of the coastal slopes of Southern California. The most productive sites for resident coastal sage scrub and chaparral birds are around riparian and freshwater systems, which also attract large numbers of migrants during spring and fall. Oak woodlands and riparian areas generally support many more species; notable species consist of the summer tanager, Bullock's oriole, black-headed grosbeak, band-tailed pigeon, western wood pewee, several swallow species, western yellow-billed cuckoo, willow flycatcher, and least Bell's vireo.

Native mammal diversity within the SEA is considerable. These likely include bats, rodents, squirrel, rabbits, mole, weasel, badger, skunks, raccoon, gray fox, bobcat, coyote, and mule deer. Black bear may also occur within the SEA boundaries, at least occasionally, but the San Gabriel Mountains population was introduced for game use, and this species is not native within the SEA.

- **Wildlife Movement:** Historically riparian corridors have served as linkages between the Pacific coastline, coastal ranges, interior ranges, the high desert and southern Sierras (via the Tehachapi range). Animals move through the Santa Felecia watershed along and within the riparian systems between Piru Lake in Ventura County and the San Gabriel Mountain range and beyond. The tributary drainages in this SEA appear fully intact and open.

Sensitive Biological Resources

Sensitive biological resources are habitats or individual species, which have been afforded special recognition by federal, state, or local conservation agencies and organizations as endangered, threatened, rare, or otherwise of concern; this is principally due to the species' declining or limited population sizes, usually resulting from habitat loss. Watch lists of such resources are maintained by the California Department of Fish and Game (CDFG), the United States Fish and Wildlife Service (USFWS), and special groups such as the California Native Plant Society (CNPS). The following sections indicate the habitats as well as plant and animal species present, or potentially present

within the SEA, that have been afforded special recognition.

- Sensitive Plant Communities/Habitats: The Santa Felecia SEA supports several habitat types considered sensitive by resource agencies, namely the CDFG [California Natural Diversity Database (CNDDDB)] because of their scarcity and support of a number of state and federally listed endangered, threatened, and rare vascular plants, as well as sensitive bird and reptile species. These communities include: coast live oak, coast live oak riparian forest, alluvial fan sage scrub, and native grassland. These communities or closely related designations are considered highest-inventory priority communities by the CDFG, indicating that they are declining in acreage throughout their range due to land use changes.

Sensitive Species: Sensitive species include those listed, or candidates for listing by the USFWS, CDFG, and CNPS. These species include, but are not limited to, the California condor, red-legged frog and Arroyo toad. The SEA identifies other species observed, recorded in the CNDDDB, or reported in previous documentation as observed within or in the immediate vicinity of the SEA.

Santa Monica Mountains SEA

The Santa Monica Mountains Significant Ecological Area (SEA) is located within the Santa Monica Mountains in a mostly unincorporated area of Los Angeles County. The SEA includes nearly all of the canyons and ridges from the Ventura-Los Angeles County line east to Sullivan Canyon and from the northern edge of development along the coastline to the southern edge of development or the Ventura/Los Angeles County line to the north.

The Santa Monica Mountains SEA includes most of the Santa Monica Mountains Range. This east-west trending range is geologically complex and characterized by steep, rugged terrain of mountain slopes and canyons, with elevation ranging from sea level to over 2,800 feet above mean sea level (MSL) at Castro Peak. The Santa Monica Mountains are bounded by the Pacific Ocean to the south, the Oxnard Plain to the west, the Los Angeles Basin to the east, and the San Fernando Valley and Simi Hills on the north. The SEA includes major canyons such as Trancas Canyon, Zuma Canyon, Ramirez Canyon, Escondido Canyon, Solstice Canyon, Corral Canyon, Malibu Canyon, Carbon Canyon, Los Flores Canyon, Tuna Canyon, Topanga Canyon, Santa Ynez Canyon, Temescal Canyon, Sullivan Canyon, Lobo Canyon, Triunfo Canyon, Liberty Canyon, and Stokes Canyon. Major drainages within the SEA include the Arroyo Sequit, Zuma Canyon Creek, Malibu Creek, Los Flores Canyon Creek, Topanga Canyon Creek, Las Virgenes Creek, and Medea Creek.

The majority of the SEA consists of undisturbed open space with scattered rural residential communities and a few high density residential developments. Open space within the SEA is mostly vegetated with dense stands of chaparral. Other types of vegetation such as woodlands and grasslands occur in smaller portions scattered throughout the SEA on moist or north facing slopes and canyon bottoms. Lesser amounts of coastal sage scrub are also present mostly as an early successional community in areas previously disturbed.

Vegetation

Vegetation within the Santa Monica Mountains SEA is comprised of a large variety of community types. The diversity of the communities reflects the topography of the range itself. The southern slopes are strongly affected by moist marine weather conditions while the northern slopes are influenced by drier inland weather conditions. In addition, the steepness of many slopes causes sharp differences in vegetation on either side of a ridge. Sensitive plant species and plant communities occurring or potentially occurring within the SEA are discussed below in the Sensitive Biological Resources section.

Plant communities within the SEA were classified using standard methodology and terminology. Most of the communities discussed correspond directly with those listed in Holland's Preliminary Descriptions of the Terrestrial Natural Communities of California (1986 and 1992 update). Other communities are named based on dominant species within them and/or commonly used terminology. Descriptions and general locations of the each plant community present within the SEA, including chaparral, redshank chaparral, coastal sage scrub, non-native grassland, native grassland, walnut woodland, valley oak woodland, coast live oak woodland, southern willow scrub, cottonwood-willow riparian forest, oak riparian forest, salt marsh, sycamore-alder woodland, freshwater marsh, and disturbed communities are presented below.

- Chaparral: Consists of broad-leafed or needle-leafed, sclerophyllous (hard-leafed), medium height to tall shrubs that form a dense cover on steep slopes below 5,000 feet in Southern California. Dominant species found within this community include ceanothus, toyon, scrub oak, sugar bush, holly-leaved cherry, hollyleaf redberry, chamise, laurel sumac, and manzanita. This plant community occurs throughout the SEA and occupies most of the higher elevations and steep slopes.
- Redshank chaparral: Is a very similar community to the chaparral described above, with the exception that red shank is the dominant species with lesser amounts of other chaparral species. This community is less common; it occurs in small patches, on steep slopes throughout the SEA.
- Coastal sage scrub: Consists of drought-deciduous, low, soft-leafed shrubs and herbs on gentle to steep slopes under 1,500 feet in elevation. This community is dominated by California sage brush, California buckwheat, black sage, purple sage, and California encelia. Coastal sage scrub is distributed throughout the SEA along dry ridgelines, slopes, and other areas previously disturbed by fire.
- Grassland: Non-native grassland consists of dominant invasive annual grasses that are primarily of Mediterranean origin. Dominant species found within this community include wild oat, slender oat, red brome, riggut brome, and herbs such as black mustard and wild radish. Native grasslands are located in small to large patches throughout the SEA in previously disturbed areas, cattle pastures, valley bottoms, and along road sides. Native grassland consists of at least ten percent cover of native purple needlegrass with the remaining coverage similar to non-native grasslands. Few small patches of native grassland can be found scattered throughout the SEA mostly in openings in coastal sage scrub and mixed with non-native grasslands
- Coast live oak woodland: Is dominated by coast live oak with a poorly developed shrub layer, which may include toyon, currant gooseberry, laurel sumac, elderberry, and mule fat. Some coast live oak woodlands in the area include scattered California walnut or valley oaks. This community occurs throughout the SEA and generally along canyon bottoms and more mesic north-facing slopes.
- Valley oak woodland: Is an open woodland community dominated by valley oak. The understory is a grassy savannah composed mostly of non-native grasses. Valley oak woodland occurs mostly on the north slope of the Santa Monica Mountains in shaded ravines and on north-facing slopes.
- Walnut woodland: Is an open woodland dominated by Southern California black walnut. Occurring on moist, fine-textured soils, the open tree canopy usually has a grassy understory.

Other characteristic species include coast live oak, sugar bush, and skunkbrush. This community occurs mostly on the north slope of the Santa Monica Mountains in shaded ravines and on north-facing slopes.

- Southern willow scrub: Is a riparian community consisting of dense, broad-leafed, winter-deciduous riparian thickets occurring within and adjacent to water courses. The dominant species of this community within the SEA are arroyo willow with lesser amounts of mule fat. This community occurs in segments along portions of several of the drainages as well as the periphery of many of the ponds and lakes throughout the SEA.
- Cottonwood-willow riparian forest: Is an open broad-leafed winter-deciduous riparian forest dominated by Fremont cottonwood, black cottonwood, black willow, and red willow. This community occurs in segments along of many of the drainages, ponds, and lakes throughout the SEA.
- Sycamore-alder riparian woodland: Is a tall, open, broad-leafed, winter-deciduous streamside woodland dominated by western sycamore and alder. These stands often form a closed canopy forest and even may appear as trees scattered in a shrubby thicket of sclerophyllous and deciduous species. This community is found infrequently within the SEA along lower reaches of several major creeks.
- Oak riparian forest: Is an open woodland of dense evergreen sclerophyllous riparian woodland dominated by coast live oak. This type appears to be richer in herbs and poorer in understory shrubs than other riparian communities. This community occurs along many streams and canyon bottoms scattered throughout the SEA.
- Freshwater marsh: Develops in areas of still or slow-moving permanent freshwater. This community is dominated by the perennial, emergent monocot cattails, which reach a height of 4-5 meters and often form a closed canopy. Bulrushes are dominant below the cattail canopy. Freshwater marsh is relatively uncommon; it occurs in small patches in natural or created sinks with water sources.
- Salt marsh: Is similar to the freshwater marsh described above but with more salt-tolerant hydrophytes present. Species associated with this community include cattails, pickleweed, and saltgrass. Salt marsh is rare within the SEA and is known only from Malibu Lagoon.
- Rock outcrop: Is a sparsely vegetated community occurring on cliffs and rock outcroppings of sedimentary, metamorphic, and volcanic rocks along the ridges and peaks of the hills and mountains. Between the rocks and in the crevices, the few plants found are usually representative of a chaparral species composition. Other plants often found on the rock faces in protected areas include *Dudleya*, *Selaginella*, and various lichens.
- Ruderal vegetation: Disturbed or barren areas either completely lack vegetation or are dominated by ruderal species. Ruderal vegetation typically found within the SEA include non-native grasses and a high proportion of weedy species, including black mustard and thistle species. Several disturbed areas are scattered throughout the SEA and take the form of residential developments, paved roads, fire breaks, dirt access roads, trails, and other similarly disturbed areas.

Wildlife

Wildlife within the SEA is generally diverse and abundant due to large acreages of natural open

space and diversity of habitat types. While a few wildlife species are entirely dependent on a single vegetative community, the entire mosaic of all the vegetation communities within the area and adjoining areas constitutes a functional ecosystem for a variety of wildlife species, both within the SEA and as part of the regional ecosystem.

The analysis of invertebrates is severely limited due to the lack of data; the SEA, however, undoubtedly supports healthy populations of a diverse assortment of invertebrate species. Amphibian populations are plentiful in the SEA due to the high moisture content provided by coastal conditions as well as the large number of drainages and year-round water supplies. The SEA is also likely to support a variety of amphibians within the moister woodland areas and canyon bottoms. Many essential reptilian habitat characteristics are present within the SEA. These include rock outcroppings that allow for high visibility and small mammal burrows for cover and escape from predators and extreme weather. These characteristics, as well as the variety of habitat types present, are likely to support a wide variety of reptilian species.

The scrubland, woodland, riparian, and grassland habitats in the SEA provide foraging and cover habitat for year-round residents, seasonal residents, and migrating song birds. In addition, the SEA encompasses many year-round water sources located throughout the SEA and abundant raptor foraging, perching, and nesting habitat along the northern slopes of the Range. The southern edge of the SEA, along the coast, is also part of the Pacific Flyway. The combination of these resources as well as the confluence of many community types provide an unusually high diversity of bird species.

Not unlike other taxonomic groups, mammal populations within the SEA are diverse and reflective of the large size and variation of topography and community types.

- **Wildlife Movement:** Although wildlife movement is hampered by rural development in the SEA, animals are still able to move through the Santa Monica Mountains in many areas. Due to its large size and topographic complexity, many linkages are certain to occur within the SEA at various bottlenecks. Malibu Creek State Park is a core habitat area in the Santa Monica Mountains, serving as a connective hub between the Simi Hills to the north and the open space preserves of Topanga State Park to the east and Mugu State Park to the west. These linkages allow movement between large open space areas within the SEA as well as between areas outside the SEA such as the Simi Hills and the western extent of the Santa Monica Mountains in Ventura County. The genetic flow through these areas is crucial in maintaining the diversity and viability of the species within the Santa Monica Mountains. Open space linkages between Kanan Road and Calabasas Parkway along Highway 101, as indicated by the National Park Service, are of particular importance for continued wildlife movement, due to the lack of alternative routes and encroachment of development. Although there are significantly large open spaces within the SEA, contiguous habitat linkages between them are critical in reducing bottlenecks and providing for long-term sustainability.

Sensitive Biological Resources

Sensitive biological resources are habitats or individual species that have special recognition by federal, state, or local conservation agencies and organizations as endangered, threatened, rare, or otherwise sensitive, this is due to the species' declining or limited distribution or population sizes, usually resulting from habitat loss. Watch lists of such resources are maintained by the California Department of Fish and Game (CDFG), the United States Fish and Wildlife Service (USFWS), and special groups such as the California Native Plant Society (CNPS). The following sections indicate the habitats as well as plant and animal species present, or potentially present within the SEA, that have been afforded special recognition.

- Sensitive Plant Communities/Habitats: This report/description supports several habitat types considered sensitive by resource agencies, namely the CDFG [California Natural Diversity Database (CNDDDB)], because of their scarcity and support of a number of state and federally listed endangered, threatened, and rare vascular plants, as well as several sensitive bird and reptile species. These communities include native grassland, coastal sage scrub, valley oak woodland, walnut woodland, southern willow scrub, southern cottonwood-willow riparian forest, sycamore-alder woodland, oak riparian forest, salt marsh and freshwater marsh, which occur throughout the area. These communities or closely related designations are considered highest-inventory priority communities by the CDFG, indicating that they are experiencing a decline throughout their range.
- Sensitive Species: Sensitive species include those listed, or candidates for listing by the USFWS, the CDFG, and the CNPS. These species include, but are not limited to, Lyon's pentachaeta, marcescent dudleya, Santa Monica Mountains dudleya, Braunton's milk vetch, tidewater goby, steelhead-Southern California ESU, California red-legged frog, California brown pelican, American peregrine falcon, southwestern willow flycatcher, bank swallow, and least Bell's vireo. In addition, the SEA identifies locations of sensitive species observed, recorded in the CNDDDB, or reported in previous documentation as observed within or in the immediate vicinity of the SEA.

Santa Susana Mountains/Simi Hills SEA

The Santa Susana Mountains/Simi Hills Significant Ecological Area (SEA) is located northwest of the San Fernando Valley within unincorporated areas of Los Angeles County and an incorporated area of the City of Los Angeles west of Chatsworth. The area is south of State Route 126 (SR-126) and the Santa Clara River, west of the Golden State Freeway (Interstate-5), and includes much of the Santa Susana Mountains in the north, the Santa Susana Pass, Chatsworth Reservoir, and the eastern portion of the Simi Hills in the south.

The Santa Susana Mountains/Simi Hills SEA includes a variety of topographic features; the northern portion of the SEA encompasses Oat Mountain and much of the Santa Susana Mountains from the Los Angeles County line east to Interstate-5. Portions of many of the canyons associated with the Santa Susana Mountains and Oat Mountain are also included such as Salt Canyon, Potrero Canyon, Pico Canyon, Towsley Canyon, El Toro Canyon, Sulphur Canyon, Devil Canyon, Ybarra Canyon, Browns Canyon, Bee Canyon, and Mormon Canyon. Several blue-line streams occur within these canyons and support many natural springs. The north slopes of the Santa Susana Mountains are within the Santa Clara River watershed, which drains the Los Padres National Forest to the north, the Angeles National Forest to the northeast and east, and the Santa Susana Mountains to the south and southeast. The remainder of the SEA is within the Los Angeles River watershed. The majority of the land in the SEA is natural open space with very sparse disturbances in the form of ranches, oil wells, and unimproved access roads. The SEA consists of east-west and northwest trending primary ridges and north-south trending secondary ridges. The peak of Oat Mountain represents the highest point in the SEA at 3,747 feet above mean sea level (MSL). The open space within the SEA supports a variety of communities but is dominated by chaparral, oak woodlands, coastal sage scrub, bigcone spruce-canyon oak woodland, and grasslands. The creeks and canyons support riparian scrub and woodland communities. At its southern end, the SEA includes the eastern portion of the Simi Hills including the east-facing slopes descending from Chatsworth Peak. Chatsworth Reservoir forms a portion of the south boundary and is currently dry except for a small detention basin north of the reservoir.

Vegetation

The plant communities within the Santa Susana Mountains/Simi Hills SEA are composed of numerous plant species. These plant species are adapted to a Mediterranean climate with a cool, wet season followed by a hot, dry season. Due to the topographic complexity and combination of coastal and desert influences, the SEA supports a wide diversity of plant species.

Plant communities within the SEA were classified using standard methodology and terminology. Most of the communities discussed in this study correspond directly with those listed in Holland's Preliminary Descriptions of the Terrestrial Natural Communities of California (1986 and 1992 update). Other communities are named based on dominant species within them and/or commonly used terminology. Descriptions and general locations of each plant community present within the SEA are given below. These include chaparral, coastal sage scrub, alluvial scrub, coast live oak woodlands, valley oak woodland, mainland cherry forest, non-native grassland, native grassland, southern willow scrub, southern cottonwood-willow riparian forest, and disturbed communities.

- Chaparral: consists of a broad mix of evergreen species and generally occurs below 5,000 feet in Southern California. Dominant species consist of broad-leaved or needle-leaved sclerophyllous (hard-leaved) shrubs, forming a dense, impenetrable cover with little or no understory growth. The understory typically consists of a considerable accumulation of leaf litter. In areas of less dense shrub cover, the understory consists of non-native grasses and other annual forbs. Dominant species include chamise, laurel sumac, hoary-leaved ceanothus, woolly-leaved ceanothus, and toyon. Chaparral is the dominant plant community within the SEA and covers many of the steep slopes and hillsides in the upper elevations.
- Coastal sage scrub: Coastal sage scrub communities consist of drought-deciduous, low, soft-leaved shrubs and herbs on gentle to steep slopes under 3,000 feet in elevation. Several dominant species may occur within scrub communities, with some areas overwhelmingly dominated by one or two species. Dominant species include California sagebrush, California buckwheat, California bush sunflower, purple sage, and deerweed. Coastal sage scrub is found at the lower elevations within the SEA on drier south-facing slopes, but can also be found on the north-facing slopes and canyon of the Santa Susana Mountains.
- Alluvial scrub: Consists of a mixture of shrubs that colonize sandy-gravelly flood deposited soils within intermittent creeks, arroyos, and drier terraces in large washes. This community intergrades with sage scrub communities and riparian communities and, therefore, occurs adjacent to these communities. Dominant species include Great Basin sagebrush, scalebroom, big saltbush, and squaw bush. Alluvial scrub is predominately found at the northern end of the SEA in Salt Canyon.
- Coast live oak woodlands: Commonly occur along drainages that experience at least a seasonal flow or in other areas under mesic conditions. Soil structure and soil moisture are the most important limiting factors for the survival of oak woodlands; soils must be deep, uncompacted, fertile, well-aerated, and well-drained. This community is dominated by coast live oak. If sufficient groundwater is present, western sycamores, usually associated with riparian habitats, may also occur in the oak woodland. Oak woodlands occupy areas within the canyons and drainages of the SEA.
- Valley oak woodland: Is an open-canopy woodland found on deep, well-drained alluvial soils below 2,000 feet. This community is almost exclusively dominated by valley oak with a grassy understory to form a savannah-like community. This community is located in small pockets in the eastern portion of the SEA.
- Mainland cherry forest: Is not well described but is typically composed of tall stands of hollyleaf

cherry on rocky, dry, north-facing slopes. Within the SEA, coast live oak is co-dominant within this community and can be found in canyons in the northern portion of the study area. This community can also be found in association with alluvial scrub in the northwestern portion of the study area as it approaches the Santa Clara River.

- **Grassland:** Grassland communities consist of low, herbaceous vegetation that are dominated by grasses but generally also harbor native forbs and bulbs as well as naturalized annual forbs. Topographic factors that contribute to grassland presence include gradual slopes or flat areas with deep, well-developed soils in areas below 3,000 above MSL. The species richness of grassland communities is dependent upon a number of land use factors, including intensity and duration of natural or anthropogenic disturbances such as grazing. Heavily grazed grasslands have a lower species richness. Non-native grassland consists of dominant invasive annual grasses that are primarily of Mediterranean origin. Dominant species found within this community include slender wild oat, wild oat, ripgut brome, and foxtail chess. Native grassland is often associated with coastal sage scrub and is found in pockets in close proximity to coastal sage scrub and non-native grassland. This community consists of at least ten percent cover of native purple needlegrass. The remaining vegetative cover is made up of non-native grasses found in annual grassland and a variety of annual, wild flowers such as golden stars and blue-eyed grass. Small patches of native grassland can be found scattered throughout the SEA mostly in openings in coastal sage scrub and mixed with non-native grasslands.
- **Southern willow scrub:** Is a riparian community occurring within and adjacent to water courses. The vegetation within this community is adapted to seasonal flooding. Southern willow scrub is characterized by dense, broad leafed, winter-deciduous riparian thickets dominated by one or more willow species. Most stands are too dense to allow understory development. The dominant species of this community within the SEA is arroyo willow, red willow, and black willow, with less common associates including mule fat. This community occurs in segments along portions of the intermittent drainages within the SEA.
- **Southern cottonwood-willow riparian forest:** Consists of an open, broad-leaved, winter-deciduous riparian forest dominated by Fremont cottonwood, black cottonwood, and several willow species including arroyo willow and red willow. This community occupies much of the Santa Clara River adjacent to the northern boundary of the SEA and also occurs within the larger, intermittent and perennial drainages within the SEA.
- **Ruderal vegetation:** Disturbed or barren areas either completely lack vegetation or are dominated by ruderal species. Ruderal vegetation typically found onsite include non-native grasses and a high proportion of weedy species, including tocalote, telegraph weed, tree tobacco, doveweed, black mustard, and thistle species. Several disturbed areas occur scattered throughout the SEA and take the form of residential developments, highways, fire breaks, dirt access roads, trails, transmission poles, and other similarly disturbed areas.

Wildlife

Wildlife within the SEA is generally diverse and abundant due to the large acreage of natural open space and the diversity of habitat types. While a few wildlife species are entirely dependent on a single vegetative community, the entire mosaic of all the vegetation communities within the area and adjoining areas constitutes a functional ecosystem for a variety of wildlife species. This applies to the SEA and the regional ecosystem.

The analysis of invertebrates in this study is difficult due to the lack of data, although limited studies have been conducted. The SEA is believed to support healthy populations of a diverse assortment of

countless invertebrate species. Amphibian populations are generally restricted in semi-arid and arid habitats but may be particularly abundant where riparian areas occur. The SEA is likely to support a variety of amphibians in abundance within wetland areas along the major canyon bottoms and the moister oak woodland areas. Many essential reptilian habitat characteristics such as open habitats that allow free movement and high visibility and small mammal burrows for cover and escape from predators and extreme weather are present within the SEA. These characteristics as well as the variety of habitat types present are likely to support a wide variety of reptilian species.

The scrubland, woodland, riparian, and grassland habitats in the SEA provide foraging and cover habitat for year-round residents, seasonal residents, and migrating song birds. In addition, the SEA encompasses many year-round water sources, abundant raptor foraging, perching, and nesting habitat. The combination of these resources as well as the mosaic of many community types provides for an unusually high diversity of bird species. Several of these species may use this SEA as their only consistent occurrence in the southeastern portion of the county.

Not unlike other taxonomic groups, mammal populations within the SEA are diverse and reflective of the diversity of habitat types. Unlike many other inland hills within the Los Angeles Basin, this SEA is large enough to support relatively stable large mammal populations despite the urban surroundings.

- **Wildlife Movement:** The Santa Susana Mountains/Simi Hills SEA includes several important linkages for wildlife movement. The Simi Hills and Santa Susana Mountains provide a vast open space corridor to foster wildlife movement between the Santa Monica Mountains to the south, San Gabriel Mountains to the east, and Los Padres National Forest to the north. Dense, natural habitat associated with the majority of the study area provides excellent opportunities for concealment and water sources while the grasslands provide an abundance of prey.

Sensitive Biological Resources

Sensitive biological resources are habitats or individual species that have special recognition by federal, state, or local conservation agencies and organizations as endangered, threatened, rare, or otherwise sensitive; this is due to the species' declining or limited distribution or population sizes, usually resulting from habitat loss. Watch lists of such resources are maintained by the California Department of Fish and Game (CDFG), the United States Fish and Wildlife Service (USFWS), and special groups such as the California Native Plant Society (CNPS). The following sections indicate the habitats as well as plant and animal species present, or potentially present within the SEA, that have been afforded special recognition.

- **Sensitive Plant Communities/Habitats:** This report/description supports several habitat types considered sensitive by resource agencies, namely the CDFG [California Natural Diversity Data Base (CNDDDB)], because of their scarcity and support of a number of state and federally listed endangered, threatened, and rare vascular plants, as well as several sensitive bird and reptile species. These communities include coastal sage scrub, alluvial scrub, valley oak woodland, mainland cherry woodland, native grassland, southern willow scrub, and cottonwood-willow riparian forest, which occur throughout the area. These communities or closely related designations are considered highest-inventory priority communities by the CDFG, indicating that they are experiencing a decline throughout their range.
- **Sensitive Species:** Sensitive species include those listed, or candidates for listing by the USFWS, CDFG, and CNPS. Species which have been recorded within the SEA as well as those reasonably expected to occur include, but are not limited to, Lyon's pentachaeta, Nevin's barberry, Braunton's milk vetch, slender-horned spineflower, arroyo southwestern toad, California red-legged frog, California condor, Swainson's hawk, white-tailed kite, and

southwestern willow flycatcher. The table includes locations of sensitive species observed, recorded in the CNDDDB, or reported in previous documentation as observed within or in the immediate vicinity of the SEA.

Pier 400, Terminal Island SEA

The California least tern (*Sterna albifrons brownii*) nests at this locality. This species is found along the southern California coast from April to September, and breeds in flat sandy areas lacking vegetation. It must be free from disturbances and near an estuary with a good supply of small fish. This type of habitat was once common along the coast of southern California, but has nearly disappeared as estuaries have been filled and channelized, and sandy beaches have become a favorite southern California recreation area. For these reasons this species has been placed on the state and federal endangered species list. Nesting populations are found from San Francisco Bay south, with the majority being bound in Orange and San Diego counties. In Los Angeles County, nesting colonies have been found irregularly at scattered localities with populations breeding regularly on Terminal Island and at Venice Beach.

The site is on Pier 400, an area of man-made fill in the Los Angeles Harbor. The site is protected from future development per inter-agency agreement and was specifically designed for least tern nesting; it is buffered from the surrounding urban development, close to foraging areas, and maintained as a flat sandy area with little vegetation. If least terns nest outside the designated boundaries, a buffer is established for said nest(s) until the chicks are fledged. The status of the population is surveyed yearly by the Port of Los Angeles.

The nest site is protected under an inter-agency agreement between the Port of Los Angeles, US Fish and Wildlife Service, California Department of Fish and Game, and the US Army Corps of Engineers. The 15-acre nesting site on Pier 400 is protected by fencing and is designated a no-trespassing area during the nesting season (April 1-August 1). During the off-season, the site can be used for other temporary purposes as long as it is restored prior to the following nesting season.

Tujunga Valley/Hansen Dam SEA

The Tujunga Canyon/Hansen Dam area possesses several important features. The floodplain behind the dam supports one of the last examples of open coastal sage scrub vegetation that was once found in the numerous arroyos of the Los Angeles basin. Portions of the river bottom have surface moisture, and support small pockets of fresh water marsh, another limited resource in Los Angeles County. The remainder of the arroyo and surrounding hillsides are dry, and support several species of plants that are otherwise found only on the desert slopes of the San Gabriel Mountains. Populations of Nevin's barberry (*Berberis nevinii*) and slender-horned spineflower (*Dodecahema (Chorizanthe) leptoceras*) have been found in the wash. Both species are extremely limited in distribution and have been placed on the federal rare and endangered species list.

The area southwest of the dam is used as a spreading ground. This has created several fresh water marsh areas that are used by marsh birds, migratory waterfowl, and shore birds. The area is also valuable as a wildlife corridor. The vegetation in the Tujunga Valley runs nearly uninterrupted from the foot of the Verdugo Mountains well up into the San Gabriel Mountains. The area has been recognized for its importance, and is used by the Audubon Society and local universities and colleges as a sample of a rapidly disappearing habitat type. As a result, the resources of the area are well known.

Valley Oak Savannah SEA

The Valley Oaks Savannah Significant Ecological Area (SEA) is located northeast of the Santa

Susana Mountains and west of the Angeles National Forest, approximately one mile south of the Santa Clara River and one mile north of Pico Canyon. The SEA is bordered on the east by Interstate- 5 and is situated between Valencia Boulevard and McBean Parkway. To the west, the SEA is bordered by the foothills of the Santa Susana Mountains, which are dominated by chaparral.

The Valley Oaks Savannah SEA is almost completely undisturbed except for a few dirt roads. The majority of the vegetation on the site consists of a valley oaks savannah containing over 1000 trees. Other vegetation on the site includes coastal sage scrub and non-native grasses.

Vegetation

Due to its small size, vegetation within the Valley Oaks Savannah SEA is limited to a few community types. All plant species observed or recorded in previous documentation within the study area are indicated in the Comprehensive Floral & Faunal Compendium of the SEA User Guide. Sensitive plant species occurring or potentially occurring within the SEA are discussed in the Sensitive Biological Resources section of this document.

Plant communities within the SEA were classified using standard methodology and terminology. Most of the communities discussed in this study correspond directly with those listed in Holland's Preliminary Descriptions of the Terrestrial Natural Communities of California (1986 and 1992 update). Other communities are named based on dominant species within them and/or commonly used terminology. Descriptions and general locations of the each plant community present within the SEA including coastal sage scrub, valley oak woodland, non-native grassland, and disturbed are given below.

- Coastal sage scrub: Coastal sage scrub communities consist of drought-deciduous, low, soft-leaved shrubs and herbs on gentle to steep slopes under 3,000 feet in elevation. Several dominant species may occur within scrub communities and some areas may be overwhelmingly dominated by one or two species. Dominant species include California sagebrush, California buckwheat, chaparral mallow, purple sage, coast goldenbush, and California-astor.
- Valley oak savannah: Is an open woodland community dominated by the broad-leaved, winter-deciduous valley oak with scattered coast live oaks in some areas. The oak trees form an open savannah with an understory that is dominated by California buckwheat and non-native grasses. This community occupies a majority of the site.
- Grassland: Grassland communities consist of low, herbaceous vegetation that are dominated by grasses but generally also harbor native forbs and bulbs as well as naturalized annual forbs. Topographic factors that contribute to grassland presence include gradual slopes or flat areas with deep, well developed soils in areas below the 3,000 foot elevation. Non-native grassland consists of dominant invasive annual grasses that are primarily of Mediterranean origin. Dominant species found within this community include slender wild oat, wild oat, ripgut brome, and foxtail chess along with scattered coastal sage scrub species. This community type occurs along the western portion of the north boundary of the SEA.
- Ruderal vegetation: Disturbed or barren areas either completely lack vegetation or are dominated by ruderal species. Ruderal vegetation typically found onsite include non-native grasses and a high proportion of weedy species, including tocalote, telegraph weed, tree tobacco, doveweed, black mustard, and thistle species. The primary disturbed area within this SEA is dirt roadways.

Wildlife

The relatively small size of the SEA and the limited variety of vegetation types is unlikely to support a large diversity of wildlife. However, acorns within the valley oak savannah provide a valuable food source for a variety of wildlife. Furthermore, the mature trees are an important source of nesting and roosting habitat for birds and other arboreal vertebrates. While some wildlife species are entirely dependent on a single vegetative community, the mosaic of vegetation communities within adjoining areas constitutes a functional ecosystem for a variety of wildlife species, both within the SEA and as part of the regional ecosystem.

The analysis of invertebrates in this study is severely limited due to the lack of data. However, due to the undisturbed nature of the SEA, it is likely to support healthy populations of many invertebrate species. Amphibians may not be abundant due to the lack of water in the SEA, however, shaded areas within the woodland may be moist enough to allow for a few species to occupy the site. Reptilian diversity within the SEA is highest within patches of coastal sage scrub and may be abundant due to the presence of alluvial wash habitat on adjacent property.

The scrubland, woodland, and grassland habitats in and adjacent to the SEA provide foraging and cover habitat for year-round residents, seasonal residents, and migrating song birds. In addition, the SEA contains abundant raptor foraging, perching, and nesting habitat. Mammal populations within the SEA respond favorably to these habitats. Not unlike other taxonomic groups, mammal populations within the SEA are limited by acreage but are likely to utilize the area frequently.

All wildlife species previously recorded, as well as those expected to occur, within the study area are indicated in the Comprehensive Floral & Faunal Compendium of the SEA User Guide. Sensitive wildlife species occurring or potentially occurring within the SEA are discussed below in the Sensitive Biological Resources section.

- **Wildlife Movement:** Wildlife movement within the Valley Oaks Savannah SEA is limited to local movement of foraging animals. Although the SEA does not support regional corridors itself, adjacent lands to the west and northwest may be important linkages for wildlife movement to and from the Santa Susana Mountains and the Santa Clara River. The location of the SEA, therefore, may be important secondarily as a corridor buffer and/or adjacent foraging grounds.

Sensitive Biological Resources

Sensitive biological resources are habitats or individual species that have special recognition by federal, state, or local conservation agencies and organizations as endangered, threatened, rare, or otherwise principally due to the species' declining or limited population sizes, usually resulting from habitat loss. Watch lists of such resources are maintained by the California Department of Fish and Game (CDFG), the United States Fish and Wildlife Service (USFWS), and special groups such as the California Native Plant Society (CNPS). The following sections indicate the habitats as well as plant and animal species present, or potentially present within the SEA, that have been afforded special recognition.

- **Sensitive Plant Communities/Habitats:** The Valley Oaks Savannah SEA supports two habitat types considered sensitive by resource agencies, namely California Department of Fish and Game (CDFG), because of either their scarcity or support of a number of state and federally listed endangered, threatened, and rare vascular plants, as well as several sensitive bird and reptile species. These communities are valley oak woodland and coastal sage scrub. These communities or closely related designations are considered highest-inventory priority communities by the CDFG, indicating that they are experiencing a decline throughout their

range.

- Sensitive Species: Sensitive species include those listed, or candidates for listing by USFWS, CDFG, and CNPS (particularly List 1A, 1B, and 2). These sensitive species include, but are not limited to, San Diego coast horned lizard, sharp-shinned hawk, and Cooper's hawk.

Verdugo Mountains SEA

The Verdugo Mountains are an extensive, relatively undisturbed island of natural vegetation in an urbanized metropolitan area. Their geographic location makes them important for scientific study, genetic interchange between otherwise isolated populations, and recreation to urban residents.

Chaparral and coastal sage scrub cover the hillsides of the mountains, with riparian vegetation, including California bay (*Umbellularia californica*), sycamore (*Platanus racemosa*), ferns, and tiger lilies, found in many of the stream drainages. These plant communities provide habitat essential to the diverse and abundant fauna found in the area. The mountains are also home to the northernmost population of *Xylococcus bicolor*.

The area serves as an island refuge, providing what remains of a link between plant and animal populations found in the Santa Monica and San Gabriel Mountains. Genetic interchange, by way of this linkage is important in perpetuating the genetic variability in isolated populations, and consequently the maintenance of healthy ecosystems.

The proximity of the mountains to urban areas provides an excellent opportunity to study the interaction between wild animal populations and humans. The area has already been used for studies concerned with public health.

IV. Coastal Island Resources

Marina del Rey (coming soon)

San Clemente Island (coming soon)

Santa Catalina Island

Santa Catalina Island, part of the Channel Islands chain, is approximately 21 miles long and eight miles wide. The Island consists of two parts connected by a low-lying isthmus at Two Harbors. The larger (southeastern) portion can be generally characterized by rolling hills with a gradual descent into the sea. The smaller (northwestern) portion is extremely steep and rugged with steep shoreline palisades. Level terrain on the Island is limited to the floors of a few large coastal canyons and areas such as Avalon, Pebbly Beach, White's Landing, Middle Ranch, Two Harbors, and Emerald Bay. Mount Orizaba, located in the central portion of the Island, represents the highest peak at 2,069 feet above mean sea level (MSL).

The climate of the Island is similar to the mainland with wet mild winters and long dry periods. The majority of the Island is relatively undisturbed, consisting of grasslands, coastal sage scrub, woodlands, and chaparral. Disturbed areas include minor camping areas, paved roads, dirt roads, radio tower pads, reservoirs and a landfill.

Vegetation

Vegetation on the Santa Catalina Island is composed of a large variety of plant community types. The rugged topography, steep and rocky shoreline, and generally undisturbed condition of the Island

has produced a unique diversity of vegetative communities. Historically, the Island was mostly brushland dominated by chamise and lilac on the northern slopes, and sagebrush and St. Catherine's lace on the south-facing slopes. Following the introduction of feral herbivores (goats, pigs, deer, and bison), this brushland was replaced in most areas by scrub oak, sumac, toyon, lemonadeberry, black sage, and white sage, which predominate today. The lack of a significant fire history and minimal differences in vegetation along elevation gradients (due to an abundance of moisture) has resulted in slope orientation as a major determinant for species presence/absence.

Plant communities on the Island were classified using standard methodology and terminology. Most of the communities discussed correspond directly with those listed in Holland's Preliminary Descriptions of the Terrestrial Natural Communities of California (1986 and 1992 update). Other communities are named based on dominant species within them and/or commonly used terminology. Descriptions and general locations of each plant community on the Island, including maritime succulent scrub, southern coastal bluff scrub, island chaparral, island oak woodland, ironwood woodland, island cherry woodland, non-native grassland, native grassland, and disturbed are given below.

- Maritime succulent scrub: Is a low, open scrub of soft-leaved shrubs and herbs with a rich admixture of stem and leaf succulents occurring on steep coastal slopes. This community is dominated by California sagebrush and prickly-pear cactus located mainly on the exposed, dry south-facing slopes typically with well-drained soils. Other species associated with this community include wild-apple, bush sunflower, St. Catherine's lace, bedstraw, island broom, laurel sumac, lemonadeberry, and black sage.
- Southern coastal bluff scrub: Is a low scrub community adapted to exposed areas with nearly constant winds and high salt content. It consists of the largest reservoir of sensitive species and island endemics due to its location within inaccessible areas. This community is dominated by giant coreopsis, wild-apple, *Dudleya* spp., St. Catherine's lace, island buckwheat, and island tarplant (David Carroll and Associates (DCA), 1994). Southern coastal bluff scrub, which occurs on the precipitous cliff, faces typically near the mouths of canyons and adjacent to some of the Island's disturbed areas on the steep seaward (east-facing) slopes and bluffs.
- Island chaparral: Consists of tall broad-leaved shrubs that form a dense cover on steep slopes. Dominant species found within this community include MacDonald's scrub oak, Santa Catalina Island ceanothus, chamise, island red berry, and Santa Catalina Island manzanita. Island chaparral occupies canyon bottoms, most of the higher elevations, and steep, north-facing slopes.
- Island oak woodland: Is dominated by island canyon oak with a poorly developed shrub layer, which includes wild blackberry, poison oak, heart-leaved Penstemon, and honeysuckle. Some island oak woodlands along riparian habitat include scattered arroyo willows. This community occurs in relatively moist, protected canyon bottoms with rich alluvial soils.
- Island ironwood forest: Is an upland community characterized by a dominance of Catalina ironwood. This Island endemic is a broad-leaved tree and occurs in groves of 50-100 trees located along the north- and east-facing slopes (DCA 1994). Other species occasionally associated with the ironwood forest include scrub oak and Catalina manzanita. The understory is sparse, supporting a number of herbaceous annuals and ferns. This community is typically found in protected canyons with rich alluvial soils in the northern portion of the Island.
- Island cherry woodland: Is an open, dense woodland dominated by Catalina cherry with an

understory consisting of Santa Catalina figwort, cudweed, common chickweed, wild cucumber, chaparral mallow, wild morning-glory, and many of the weedy forb and grass species. This community occurs mostly along riparian habitats and in valley/canyon bottoms in the northern portion of the Island.

- **Grassland:** Grassland communities consist of low, herbaceous vegetation that are dominated by grasses but generally also harbor native forbs and bulbs as well as naturalized annual forbs. Non-native grassland consists of dominant invasive annual grasses that are primarily of Mediterranean origin. Dominant species found within this community include slender oats, wild oats, ripgut brome, foxtail chess, and wild mustard. Non-native grasslands are located in small patches throughout the Island; along many of the ridges and gentle slopes with shallow clay or clay loam substrates, and in more significant acreage, on rolling hills in the southeastern portion of the Island. Native grassland consists of at least 10 percent cover of native grass species with the remaining coverage similar to non-native grasslands. Small patches of native grassland can be found on the Island mostly mixed with non-native grasslands.
- **Disturbed areas:** Either completely lack vegetation or are dominated by ruderal species within developed areas. Vegetation typically include horehound and tree tobacco. Several disturbed areas occur throughout the Island and take the form of residential developments, paved roads, fire breaks, dirt access roads, trails, and other similarly disturbed areas.

Wildlife

Wildlife on the Island is diverse and abundant due to the large acreage of natural open space and the diversity of habitat types. While a few wildlife species are entirely dependent on a single vegetative community, the vegetation communities within the area and adjoining areas constitute a functional ecosystem for a variety of wildlife species.

The analysis of invertebrates is severely limited due to the lack of data. The Island, however, supports healthy populations of a diverse assortment of countless invertebrate species. Amphibian populations are generally abundant and diverse due to the high moisture content provided under the shade of woodlands and the abundance of drainages. Many essential reptilian habitat characteristics are present. These include open habitats that allow free movement and high visibility and small mammal burrows for cover and escape from predators and extreme weather. These characteristics as well as the variety of habitat types present are likely to support a wide variety of reptilian species.

The scrubland, woodland, riparian, and grassland habitats provide foraging and cover habitat for year-round residents, seasonal residents, and migrating song birds. In addition, several year-round water sources and abundant raptor foraging, perching, and nesting habitat are located throughout the area. The combination of these resources as well as the confluence of many community types provides for a high diversity of bird species. Unlike other taxonomic groups, mammal populations are diverse and reflective of the unique island habitat types.

- **Wildlife Movement:** Wildlife movement occurs throughout the Island. Concentrated movement corridors or bottlenecks are uncommon on the Island due to the abundance of uninterrupted open space and the lack of disturbed areas. In general, movement takes place in large drainages, along ridgelines, and along dirt roads. However, the small isthmus at Two Harbors represents a significant reduction in the ability for animals to move freely between the two parts of the Island. Movement across the isthmus has been further restricted by human encroachment of the Two Harbors community and Island visitors. Although a lack of movement across the isthmus may isolate some animal populations and reduce the genetic diversity on either side, this division has provided a unique opportunity for restoration by isolating and

removing feral animals from the Island.

Sensitive Biological Resources

Sensitive biological resources are habitats or individual species that have special recognition by federal, state, or local conservation agencies and organizations as endangered, threatened, rare, or otherwise sensitive, due to the species' declining or limited distribution or population sizes, usually resulting from habitat loss. Watch lists of such resources are maintained by the California Department of Fish and Game (CDFG), the United States Fish and Wildlife Service (USFWS), and special groups such as the California Native Plant Society (CNPS). The following sections indicate the habitats as well as plant and animal species present, or potentially present on the Island, that have been afforded special recognition.

- **Sensitive Plant Communities/Habitats:** The Island supports several habitat types considered sensitive by resource agencies, namely the CDFG, because of their scarcity and support of a number of state and federally listed endangered, threatened, and rare vascular plants, as well as several sensitive bird and reptile species. These communities include maritime succulent scrub, southern coastal bluff scrub, island chaparral, island cherry woodland, island ironwood forest, island oak woodland, and native grassland, which occur throughout the Island. These communities, or closely-related designations, are considered highest-inventory priority communities by the CDFG, indicating that they are experiencing a decline throughout their range.
- **Sensitive Species:** Include those listed, or candidates for listing by the USFWS, CDFG, and CNPS. These species include, but are not limited to, Lyon's pentachaeta, Santa Cruz Island rock cress, island rush-rose, Catalina Island mountain-mahogany, Santa Catalina Island ironwood, tow-striped garter snake, California brown pelican, bald eagle, American peregrine falcon, Santa Catalina ornate shrew, and island fox.

Santa Monica Mountains Coastal Zone (coming soon)

V. Watersheds

Antelope Valley

The Antelope Valley area is a unit of the Lahontan hydrologic region. The south half of this region is located in Antelope Valley of north Los Angeles County. Unlike the coastal watersheds in the County, it is a closed basin on the edge of the Mojave Desert, having no outlet to the ocean or major river system. As a component of this area, numerous streams drain the north-facing San Gabriel Mountains, carrying rainfall and snow melt from the Angeles National Forest into the valley.

During most years the rainfall in the Antelope Valley is scant, averaging less than 9 inches per year. Every few years major storms cause flooding, sending sheets of water flow across the eastern portion of the Antelope Valley to the dry lakebeds of Rosamond and Rodgers lakes in Kern County. Uninhibited by development, the sheet flow filters into the groundwater basin or evaporates on the lakebeds, leaving the surface smooth and flat. This natural runoff process is important for two reasons: 1) it benefits the local communities with groundwater recharge, and 2) it seasonally resurfaces the dry lake beds, which are used for aircraft landings at Edwards Air Force Base.

The Lahontan Regional Water Quality Control Board monitors the Antelope watershed through its Basin Plan for the region. The Basin Plan calls for land use controls to help reduce pollutants in

stormwater runoff. In particular, the Plan advocates limiting impervious surfaces, restoring natural vegetation and protecting the headwaters of stream channels and riparian areas.

Los Angeles River Watershed

The Los Angeles River watershed covers 834 square miles. It encompasses the San Fernando Valley and is the largest watershed in the Los Angeles Basin. The river extends 51 stream miles, from the confluence of Bell Creek and Arroyo Calabasas in Ventura County to the Pacific Ocean. Numerous tributaries feed the River as it flows through the San Fernando Valley to the Long Beach Harbor. Several important biotic communities exist in the northern tributaries that feed the river, including freshwater marsh areas in Tujunga Canyon and the Hansen Flood Control Basin. The natural habitat in these tributaries provides a semi-protected corridor for wildlife between the Angeles National Forest and the river.

By 1960, the Los Angeles River was lined with concrete along most of its length by the U.S. Army Corps of Engineers in order to prevent the loss of lives and property from flood damage. The river's sole purpose for years was efficient water conveyance—carrying stormwater from the land to the ocean as quickly as possible. Efforts are being made to capture as much stormwater as possible and redirect it to spreading grounds and reservoirs to replenish groundwater basins, saving thousands of acre-feet of water every year.

The concentration of pollutants that enters the Los Angeles River is extremely high due to accumulated urban stormwater runoff from the hundreds of square miles of impervious surfaces that flank the river. To address these problems, the County, local jurisdictions, a variety of stakeholders, and the Los Angeles Regional Water Quality Control Board are implementing programs to reduce the number and concentration of pollutants that enter the river.

For years the river was considered as strictly a stormwater conveyance system. Over the past two decades, interest in its recreational function has emerged, culminating in a river-wide planning effort in the 1990s, which resulted in the adoption of the *Los Angeles River Master Plan* by the Board of Supervisors in 1996. The plan was created through a cooperative effort by the Departments of Public Works, Regional Planning, Parks and Recreation and many river stakeholder groups for the enhancement of aesthetic, recreational, flood control and environmental functions of the river. The plan seeks to do so by expanding bikeway, walking and equestrian trails to and along the river, enhancing existing trails with landscaping, and promoting economic development opportunities. Since the adoption of the plan, an advisory committee has overseen many new river projects, including bike trails, pocket parks, equestrian trail enhancements, river art and signage. So much public interest in the river has been generated that many more improvements are anticipated in the future.

The County is also working with various organizations and agencies that are involved in watershed-related planning activities, such as the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy. The attention being paid to the watershed has resulted in a better understanding of its functions and generated an unprecedented network of residents, private organizations and government entities dedicated to watershed management.

Compton Creek Sub-Watershed

Compton Creek drains an area of approximately 42 square miles, including portions of the Cities of Carson, Compton, Long Beach, Los Angeles, Lynwood, and South Gate and portions of the Los Angeles County unincorporated communities of Florence-Firestone, Willowbrook, and Rancho Dominguez. Compton Creek drains into the Los Angeles River, which then empties into San Pedro

Bay at the eastern edge of the Long Beach Harbor.

With more than 700,000 residents, the Compton Creek Watershed is highly urbanized and most of its drainage courses are lined with concrete. Approximately 97 percent of the land area is occupied by homes, businesses, roads, and similar uses. As a result of excess levels of trash and coliform bacteria, surface and groundwater quality in Compton Creek has been degraded, natural hydrologic functions modified, and plant and wildlife diversity reduced.

In recent years, various groups, cities, and agencies have worked to transform Compton Creek into a valued community asset, improve and expand open space, optimize water resources, preserve and restore habitat, and create a network of trails and bike paths. Some of these efforts have been informally coordinated, in recognition of the potential to extend benefits beyond the borders of individual cities, create opportunities to leverage benefits, and maximize funding resources.

Dominguez Channel Sub-Watershed

The Dominguez Channel sub-watershed drains approximately 110 square miles of intensely urban area and plays a significant role in the health of coastal aquatic communities. Storm drains and minor tributaries feed the Dominguez Channel, which empties into the Los Angeles Harbor. There are significant stormwater pollution issues in this watershed. For example, old waste disposal practices have left DDT and PCBs deposited in the channel bottom, which are carried to the harbor in sediment swept up by stormwater.

Located in the southern portion of Los Angeles County, 96 percent of the watershed is developed, and approximately 50 percent is comprised of residential land uses. Nine unincorporated county islands are located within this urban-industrial watershed and each of these areas affects and is affected by the health and function of Dominguez Channel and its tributaries.

San Gabriel River Watershed

The San Gabriel River watershed encompasses part of the Angeles Forest, the San Gabriel Valley, and large urban areas in southeast Los Angeles County. It is bounded by the Los Angeles River on much of its west flank, and extends to San Bernardino and Orange Counties. Totalling more than 640 square miles, the watershed has extensive areas of un-channeled tributaries, which support riparian and woodland habitats. Its northern reaches in the Angeles Forest are dramatically different from the developed 167 square miles in the Los Angeles basin. It is such an important county resource that the U.S. Congress preserved two wilderness areas within this watershed. The San Gabriel Wilderness Area—36,215 acres—along the West Fork of the San Gabriel River, and Sheep Mountain Wilderness Area, 31,680 acres along the East Fork.

The main watercourse in this watershed is the San Gabriel River. The river extends 59 stream miles from the National Forest to the Pacific Ocean, draining 350 square miles of land. It also recharges groundwater tables in several basins. The major tributaries that feed the river include Coyote Creek, Walnut Creek and San Jose Creek. The upper section of the San Gabriel River and its tributaries are still considered relatively pristine. However, intensive recreational use and erosion due to wildfires in this area may threaten water quality and wildlife that depend on the river. The middle section of the river has been extensively modified throughout the San Gabriel Valley to prevent flooding and encourage ground water recharge. The lower section, similar to the Los Angeles River, is lined with concrete from Firestone Boulevard to the bay. In contrast to the upper and middle sections of the river, water flow in the lower section stems primarily from urban runoff and treated effluent from municipal wastewater treatment facilities.

A clear link exists between the health of this watershed and the quality of life for millions of county

residents. The upper reaches of the San Gabriel River support wildlife, deliver drinking water and provide a myriad of recreational opportunities. To protect and enhance the multiple benefits of this resource a river-wide planning effort entitled *San Gabriel River Master Plan* was adopted in 2006. This effort, spearheaded by Los Angeles County Department of Public Works, brings together a dynamic group of stakeholders, including the thirteen cities along the river, residents, environmental groups and many business and community leaders.

The County is working with stakeholders involved in other planning activities, such as the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy and the Santa Monica Mountains Conservancy. Together, stakeholders developed a watershed and open space plan in 2001 entitled *Common Ground: From the Mountains to the Sea* that provides general guidelines for improvement of the San Gabriel and Lower Los Angeles Rivers Watersheds through community development, public awareness, preservation of open space and creation of recreational opportunities—particularly along the rivers.

In addition to watershed and river plans, the County has expanded its Significant Ecological Area (SEA) overlay in parts of San Gabriel Canyon, East San Gabriel Valley, San Dimas Canyon area and Puente Hills. This overlay will provide for a more rigorous environmental review of applicable proposed projects. Maintenance and vegetation removal within the River are exempt within the SEA, due to their public safety roles in managing flood channel capacity. Further information on Significant Ecological Areas is located in the SEA section of this Element.

Santa Clara River Watershed

The Santa Clara River watershed is an extensive hydrologic system that encompasses the western portion of the Angeles National Forest in Los Angeles County and eastern portion of Los Padres National Forest in Ventura County. The Santa Clara River—an essential component of this watershed—recharges local ground water, provides riparian habitat and supplies water to downstream agricultural lands in Ventura County. It is the largest relatively unaltered river system in Southern California, and the single most important natural wildlife corridor in Los Angeles County. The river and its tributaries provide drainage for approximately 680 square miles of the upper watershed within Los Angeles County. The river's major tributaries include Castaic Creek, San Francisquito Canyon Creek, Bouquet Canyon Creek, Sand Canyon Creek, Mint Canyon Creek and Santa Clara River South Fork. Several endangered species are found in this watershed, including the Arroyo Toad and Unarmored Three-spine Stickleback. Another important stretch of the river supports a variety of riparian-obligate songbirds and birds of prey between Castaic Junction and Blue Cut near the Ventura County line, where the groundwater basin thins and narrows, forcing groundwater toward the surface.

A link exists between the health of this watershed, particularly its tributaries, and development in the area. Urban expansion in the 1990s and early 2000s impacted the watershed on several levels, including a reduction in local water supplies and disappearing open space. Furthermore, the land use activities in this area have created many square miles of impervious surfaces, which has created more urban runoff and reduced the amount of water that would naturally percolate into groundwater basins. By employing watershed management techniques, the County aims to curb this trend.

In addition to these ongoing efforts, the County has expanded its Significant Ecological Area overlay in several areas of the watershed, including the headwaters of the Santa Clara River and the Santa Susana Mountains. Further information on Significant Ecological Areas is located in the SEA section of this Element.

Santa Monica Bay Coastal Watersheds

The County of Los Angeles manages the coastal watersheds of Santa Monica Bay as two distinct management areas due to the vast differences in land use and population density: North Santa Monica Bay Watersheds (North Bay) and the South Santa Monica Bay Watersheds (South Bay). The North Bay consists of the Malibu Creek and Topanga Creek watersheds as well as sixteen other rural coastal watersheds. North Bay watersheds are primarily natural open space with low-density residential developments. The South Bay includes Ballona Creek watershed, Marina del Rey, and 10 urban coastal sub-watersheds. Although vastly different from one another, these watersheds have a direct impact on the quality and quantity of water delivered to the Santa Monica Bay. The Malibu Creek watershed traverses a rural mountainous area, while the Ballona Creek watershed is comprised of intensely urban development.

The coastal watersheds of the Santa Monica extend from the border of Ventura and Los Angeles County to outer Cabrillo Beach in San Pedro. This length includes 44 beaches along 55 miles of coastline attracting over 55 million beach visitors each year. While the Malibu Creek and Ballona Creek Watersheds also drain to Santa Monica Bay, they are typically managed as separate areas due to their significant size. A Bacteria Total Maximum Daily Load (Bacteria TMDL) for the Santa Monica Bay Beaches became effective on July 15, 2003.

Ballona Creek Sub-Watershed

The Ballona Creek Watershed is located in the Western portion of Los Angeles County and is approximately 130 square miles in size. It is highly urbanized and is home to more than 1.6 million residents. It includes the unincorporated communities of Marina del Rey, Baldwin Hills, Ladera Heights and a portion of Playa del Ray. Three tributaries drain 130 square miles: Centinela Creek, Sepulveda Canyon Channel and Benedict Canyon Channel, which all feed into Ballona Creek before entering Santa Monica Bay.

Over the years, the urbanization of the Ballona Creek watershed routed many small tributaries through storm drains. These storm drains collect runoff from city streets and carry it to major tributaries and eventually to Ballona Creek, which flows into the Santa Monica Bay. Major contributors to the impaired water quality in the Creek are urban runoff and illegal dumping. These pollutants significantly contribute to pollution in the Santa Monica Bay, degrading ecosystems and recreational opportunities.

The Ballona Creek Trash TMDL became effective on August 11, 2005. To comply with this regulation, the County of Los Angeles adopted an aggressive strategy to reduce the amount of trash entering Ballona Creek from unincorporated areas. The Ballona Creek Metals TMDL became effective on October 29, 2008, the Ballona Creek Toxics TMDL became effective on January 11, 2006, and the Ballona Creek Bacteria TMDL became effective on April 27, 2007.

Malibu Creek Sub-Watershed

Malibu Creek Watershed is the largest rural watershed in North Santa Monica Bay. It is approximately 109 square miles and consists of over 75 percent natural open space. The Malibu Creek watershed encompasses a major portion of the Santa Monica Mountains and is one of many sub-watersheds that drain the mountain range. Over the past twenty years, the number of residents living in the Malibu Creek watershed has doubled. This growth and development has increased runoff, sedimentation and demand for imported water, and caused various tributaries that feed Malibu Creek to be channelized. As a result, the natural flow of water within the watershed has changed, degrading oak and riparian woodlands, steelhead trout populations, and the Malibu

Lagoon.

The primary watercourse draining this watershed is Malibu Creek, which flows into Malibu Lagoon. The health and function of Malibu Creek and its tributaries is an important issue as these waterways drain 109 square miles of the watershed into Malibu Lagoon—a National Estuary.¹ Two important plant communities live in the lagoon: the coastal salt marsh and coastal strand, and over 200 species of birds use the lagoon as a refuge.

A clear link exists between the health of Malibu Creek watershed, particularly Malibu Creek, and development in the mountains. Land use activities account for about half of all pollutants that enter the Malibu watershed drainage. Pollution sources include roadway runoff, septic system overflow, new construction, and vegetation clearance.

The Santa Monica Mountains North Area Plan, adopted by the Board of Supervisors in 2000, and the 1986 Local Coastal Plan address the adverse affect of development on the Santa Monica Mountains. These plans, which cover portions of the mountains north of the Coastal Zone, significantly restrict the potential number of dwelling units that may be built in the mountains. The guiding principle of the plan is to let the land dictate the site and type of development that should be allowed.

In addition to these plans, the County has expanded its Significant Ecological Area overlay in several parts of the watershed, encompassing a majority of the mountain range from Ventura County to the City of Los Angeles. Further information on Significant Ecological Areas is located in the SEA section of this Element.

The Malibu Creek Bacteria TMDL became effective on January 24, 2006.

Marina del Rey Sub-Watershed

The Marina del Rey Watershed is approximately two square miles in size and its area was mainly constructed from remnants of the Ballona Creek Wetlands and Estuary. The Marina del Rey Harbor, Mothers' Beach, and Back Basins Bacteria TMDL became effective on March 18, 2004 and a Toxics TMDL became effective on March 22, 2006.

V. Agricultural Resource Area Overlay Methodology

Figure 6.4 in the Conservation and Open Space Element shows the County's Agricultural Resource Area Overlay (ARA) designation, which identifies areas where the County promotes agricultural activities. The ARA boundaries were derived in part from previously defined Agricultural Opportunity Areas (AOAs) in 1980 General Plan. The AOAs include areas historically farmed in the Antelope Valley, although areas with environmental constraints, such as sensitive habitats, Hillside Management Areas and areas with potential for soil erosion were removed from the boundaries. In addition to the adopted AOA areas, the ARA includes farmland identified by the State Department of Conservation, including Prime Farmland, farmland of Statewide Importance, Farmland of Local Importance, and Unique Farmland. The boundaries were then refined to limit environmental impacts,

¹ The Santa Monica Bay is designated a National estuary under the U.S. EPA's National Estuaries Program.

by removing Sensitive Environmental Resource Areas and Significant Ecological Areas. The map excludes areas with adopted Specific Plans, as well as rural town centers and rural town areas, as defined in the Antelope Valley Area Plan. Only areas with densities of at least ten dwelling units per acre remain. In addition, areas of fewer than 40 contiguous acres were removed to reflect the land area needed for active agriculture.

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